Risk, rhetoric, and response
effective communication with at-risk groups to improve health outcomes during an influenza pandemic

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RISK, RHETORIC, AND RESPONSE: EFFECTIVE COMMUNICATION WITH AT-RISK GROUPS TO IMPROVE HEALTH OUTCOMES DURING AN INFLUENZA PANDEMIC

Submitted by ERIN ANNE MCCLELLAND to King's College London as a thesis for the degree of Doctor of Philosophy in War Studies, January 2019

Abstract

Pandemic influenza poses a significant risk to public health and safety, though not every population group will be equally at-risk. It is therefore important to study how communication with the public can be used to encourage the uptake of protective behaviours both in the public at large and, particularly, with at-risk groups, in order to improve health outcomes during a future pandemic. The aim of this project is to understand the likely perceptions of risk, behavioural responses, and communication needs for groups who may be particularly at risk during an influenza pandemic. Using an analytical framework based on Protection Motivation Theory and the COM-B model, this project examines two potentially at-risk groups. Older adults (>70 years) are traditionally considered at-risk or vulnerable during extreme events whilst younger adults (18-25 years) are not. In the event of an influenza pandemic, however, there is the potential for older adults to be less affected than with seasonal influenza whilst younger adults may find themselves at greater risk. By exploring perceptions of risk and vulnerability and likely behavioural response in these groups, this project aimed to determine how public health communication can be adapted to result in better health outcomes in the event of a future pandemic.

Following a review of relevant published literature and emergency preparedness planning guidance, interviews were conducted with emergency planners responsible for universities, facilities catering to older adults, London boroughs, and the UK in order to gain a better understanding of existing pandemic planning challenges. Individual and small group interviews were then conducted with London-based university students and older adults to better understand their perceptions of risk, likely responses and communication needs during an influenza pandemic. Participants across both population groups were largely consistent in their perceptions of at-risk groups. Whilst participants were broadly open to adopting protective behaviours, social isolation received slightly more support amongst older adults. Additionally, preferred communication methods varied between the population groups with older population favoured traditional

communication methods rather than new media. A further set of interviews were then conducted with an older adult population group to test the effectiveness of providing information to address likely misperceptions about risk profiles as identified in Phase 1. Participants in this second set of interviews expressed similar views around risk perception, behavioural intent and communication needs as the first set of interviews. Participants in the second phase of interviews were divided into two groups with Group B receiving additional information on public health decision making. Participants in both groups expressed a desire for further explanatory information but participants in Group A were more inclined to assume utilitarian rather than risk-based motivations thereby highlighting the importance of effective communication with the public during an extreme event.

The findings of this research would suggest that perceptions of response and self-efficacy around recommended protective behaviours are consistently high amongst older and younger adults. Social isolation, however, appears to be the most challenging behaviour to adopt, particularly for younger adults. Additionally, both older and younger adults expressed similar perceptions of at-risk groups. Information needs vis-a-vis content were consistent between the population groups and in line with practitioner assumptions. Preferred media routes, however, varied between older and younger adults, highlighting the need for a multi-media approach to communication in a pandemic.

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1 Chapter I: Introduction

1.1 Chapter Overview

The purpose of this thesis is to examine the interrelatedness of risk perception, behavioural intentions, and information needs amongst potentially at-risk populations during a future influenza pandemic. This chapter will introduce the background and aims of the research, and provide an outline of the studies presented in this thesis. As such, the health security implications of pandemic influenza, classification of vulnerable populations, and the importance of communication in extreme events will be explored in this chapter.

1.2 Aims of the thesis

The overarching aim of this thesis is to better understand the likely perceptions, reactions and communication needs for those who may be particularly at risk or vulnerable during an influenza pandemic, and to assess how communication with these groups can be used to encourage behaviours that may improve health outcomes. How the public responds to health threats plays a key role in determining the impacts of public health crises and other disasters. Research regarding the ability of effective risk communication to increase the likelihood of public compliance with official health advice during emergencies indicates that risk communicators must understand and address issues such as an individual's perception of risk and belief in the efficacy of protective action as well as their perceived capability, motivation and opportunity to respond in order to change their behaviour.[1] This work, however, has primarily focused on the general public rather than particular at-risk population groups. Older adults (>70 years) are traditionally considered at-risk or vulnerable during extreme events whilst younger

[1] Teasdale et al., "The Importance of Coping Appraisal in Behavioural Responses to Pandemic Flu"; Bish et al., "Factors Associated with Uptake of Vaccination against Pandemic Influenza: A Systematic Review"; Sadique et al., "Precautionary Behaviour in Response to Perceived Threat of Pandemic Influenza."Rubenstein et al., "Public Preferences for Vaccination and Antiviral Medicines under Different Pandemic Flu Outbreak Scenarios."; Smith et al., "A Systematic Review of Factors Affecting Intended and Actual Adherence with Antiviral Medication as Treatment or Prophylaxis in Seasonal and Pandemic Flu."

adults (18-25 years) are not. In the event of an influenza pandemic, however, past experience has demonstrated there is the potential for older adults to be less affected than with seasonal influenza, whilst younger adults may find themselves at greater risk as pandemic influenza does not always follow a typical or traditional profile of risk as those who are susceptible or at-risk (ie: both young or old) tends to change in a pandemic.[2]

In order to address the gap, this project uses an analytic framework based on Protection Motivation Theory and the COM-B model to examine two at-risk groups; young adults (18-25 years) and older adults (>70 years). By exploring perceptions of risk and vulnerability and likely behavioural responses in these groups, this project aims to determine how public health communication can be adapted to encourage greater adherence to public health advice through the adoption of recommended protective behaviours such as hand hygiene, respiratory hygiene, voluntary isolation, and vaccination.

1.3 Background to the Research

1.3.1 Pandemic Influenza

Pandemic influenza is recognized by the UK government to be one of the pre-eminent risks facing the UK.[3] Over the past century, the world has experienced four influenza pandemics (1918, 1957, 1968, 2009) of varying severity[4] and a future pandemic is considered to be a question of 'when' rather than 'if'.[5] Whilst the timing, strain, and severity of a future pandemic are uncertain, it is nonetheless important to ensure that preparedness measures are in place to respond to the next pandemic.

Influenza is a respiratory illness caused by a viral infection with common symptoms including: fever, cough, sore throat, headache and muscle pain. It is spread

[2] US Centers for Disease Control and Prevention, "Past Pandemics."
[3] Sellwood, "Operating Framework for Managing the Response to Pandemic Influenza."
[4] US Centers for Disease Control and Prevention, "Past Pandemics."
[5] UK Department of Health Pandemic Influenza Preparedness Team, "UK Influenza Pandemic Preparedness Strategy."

primarily through the transmission of infected airborne particles from person to person.[6] It is divided into three types: A, B and C. Influenza A viruses are named according to the hemagglutinin (H) and neuraminidase (N) proteins found on their surface. There are 18 H subtypes and 11 N subtypes and the combination and associated naming protocol (ie: H1N1) provides information on the specific strain. Influenza B viruses are categorized according to strain and lineage (ie: B/Victoria). Influenza C is generally quite mild and of limited spread.[7] The difference between subsets of influenza is important both in terms of preparing the composition of the yearly seasonal flu vaccine as well as in understanding how pandemics occur. Influenza pandemics occur when a strand of influenza A develops the ability for sustainable human-to-human transmission. In particular, it requires a variant of influenza A to which there is little to no existing immunity. This often occurs when human and animal influenza viruses either mix or when one variant becomes transmissible to other species.[8] Seasonal influenza usually infects around 10% of the population while pandemic influenza is typically expected to infect between 15-40% and sometimes more.[9]

A further distinction between seasonal and pandemic influenza is in the morbidity and mortality profile as pandemic influenza can skew to younger adults. Seasonal influenza tends to be predictable and primarily attacks the very young (under two years of age) and the elderly (over 65 years) as well as individuals with certain medical conditions.[10] These subpopulations as a whole account for the majority of influenza related-hospitalizations however older adults represent over 90% of influenza-related deaths, often due to complications such as pneumonia.[11] In addition, influenza infections in older individuals have also been associated with decreased overall health and functional decline.[12]

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[6] World Health Organization, "Influenza."
[7] US Centers for Disease Control and Prevention, "Influenza (Flu): Types of Influenza Viruses."
[8] World Health Organization, "Pandemic Influenza Risk Management: WHO Interim Guidance."
[9] Barry, "Observations on Past Influenza Pandemics." S95
[10] Jain et al., "Hospitalized Patients with 2009 H1N1 Influenza in the United States."
[11] Deans, Stiver, and McElhaney, "Influenza Vaccines Provide Diminished Protection but Are Cost-Saving in Older Adults."
[12] Lang et al., "Influenza Vaccination in the Face of Immune Exhaustion: Is Herd Immunity Effective for Protecting the Elderly?"

While seasonal influenza tends to target older adults as well as the very young and individuals with specific medical conditions, pandemic influenza tends to feature higher proportions of younger adults affected.[13] In the 1918 pandemic, for example, more than 50% of deaths occurred in individuals between the ages of 14 and 40.[14] This pattern was also observed in the 1968 pandemic where 65% of deaths were among individuals under 65 years of age.[15] In the United States during the recent 2009 H1N1 pandemic, 79% of the cases reported as of November 2009 were in people younger than 30 years of age.[16] It has been suggested that this difference is the result of antigenic cycling as older adults may possess a measure of immunity due to previous exposure to similar viruses, often decades earlier.[17] The increased risk for younger adults is significant as it demonstrates that seasonal flu preparedness plans are not sufficient to deal with pandemic influenza.

Although mortality rates among older adults (in the United States) were considered low during the H1N1 pandemic, it should be noted that a 'low' percentage was still 8%.[18] While case incidence in older adults decreased in the 1918 pandemic, they suffered a high case-fatality rate due in large part to complications such as pneumonia.[19] Protective measures such as handwashing and vaccination can help to reduce the risk of infection however, aging is often accompanied by a reduction in immunity. Vaccination is believed to be able to reduce seasonal influenza-associated fatalities in older populations by as much as 80%[20], though the immune systems of older adults may not be able to respond as effectively to vaccinations as those of younger adults.[21]

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[13] Greer, Tuite, and Fisman, "Age, Influenza Pandemics and Disease Dynamics."
[14] Barry, "Observations on Past Influenza Pandemics.", S96
[15] Simonsen et al., "Pandemic versus Epidemic Influenza Mortality: A Pattern of Changing Age Distribution.", 57
[16] Yang, "Predicting Young Adults' Intentions to Get the H1N1 Vaccine: An Integrated Model.", 69
[17] Nguyen and Noymer, "Influenza Mortality in the United States, 2009 Pandemic: Burden, Timing and Age Distribution."
[18] Abdel-Haq and Asmar, "Novel Swine-Origin Influenza A: The 2009 H1N1 Influenza Virus.", 75
[19] Morens and Taubenberger, "Pandemic Influenza: Certain Uncertainties.", 271
[20] Lang et al., "Influenza Vaccination in the Face of Immune Exhaustion: Is Herd Immunity Effective for Protecting the Elderly?"
[21] Katz et al., "Immunity to Influenza: The Challenges of Protecting an Aging Population."

The difference between seasonal and pandemic influenza becomes particularly important when considering the development and use of vaccines. The seasonal vaccine is traditionally composed of three strains of influenza (two of A and one of B) and is referred to as a trivalent vaccine.[22] The three strains in question change annually based on World Health Organization recommendations, though each country makes its own decision as to the composition it will use.[23] As the northern and southern hemisphere peak-influenza seasons differ, these recommendations occur twice a year and take into account the dominant strains circulating. In order to prepare the vaccine in time to be ready for the start of flu season, the composition of the vaccine does not always perfectly match the strains that circulate, though there may still be a measure of transferred immunity from exposure to similar strains.[24] Unlike the proactive preparation of the seasonal influenza vaccine, pandemic influenza vaccination is developed reactively in response to a particular strain and, as such, is not available until the pandemic is underway. The vaccine development process requires approximately five to six months.[25]

It should also be noted that availability of pandemic vaccination is not only dependent on scientific research and industrial development but also on individual state contracts with the manufacturers. States with contracts in place will be at an advantage. For example, the UK has what are referred to as 'sleeping contracts' with two pharmaceutical manufacturers to guarantee a specific number of vaccine doses in the event of a pandemic. The UK, however, is one of several countries with the contracts and so it is not guaranteed to receive the full order right away.[26] A slightly different model can be seen in Canada where the government has pre-existing contracts in place with domestic manufacturers to ensure as rapid and

[22] World Health Organization, "Influenza (Seasonal), Fact Sheet N. 211."
[23] US Centers for Disease Control and Prevention, "Influenza (Flu): Selecting the Viruses in the Seasonal Influenza (Flu) Vaccine."
[24] US Centers for Disease Control and Prevention.
[25] World Health Organization, "Pandemic Influenza Vaccine Manufacturing Process and Timeline."
[26] Parliamentary Office of Science and Technology, "H1N1 'Swine Flu' Vaccine."

fulsome a production and distribution of vaccine to the public as possible and has worked with the manufacturer to ensure rapid regulatory approval.[27]

1.3.2 Vulnerable Populations in the Context of Pandemic Influenza

There is increasing interest in targeting vulnerable populations in emergency preparedness planning.[28] Unless the specific circumstances and requirements of each vulnerable population are understood, it will be difficult to ensure their needs are met. A 2008 Cabinet Office report on 'Identifying People Who Are Vulnerable in a Crisis' lists 13 categories of vulnerable individuals, including older adults.[29] Older adults, for instance are not just more vulnerable to a pandemic but to extreme events in general. This population group represents 90% of seasonal influenza deaths.[30] Following Hurricane Katrina, 75% of bodies found were over the age of 60[31], as were 95% of fatalities in the 2011 Great East Japan earthquake.[32] Despite a tendency to disproportionately affect younger populations, pandemic influenza is still a threat to older adults.[33] Aging often results in a reduction in immunity that not only increases an individual's vulnerability to influenza but also to other infectious diseases and may limit the body's ability to respond as effectively to preventive treatments such as vaccinations.[34]

Younger adults, on the other hand, are not a population traditionally considered to be at-risk and yet, depending on the strain and virulence of an influenza pandemic, may find themselves at greater risk. More than 50% of fatalities in the 1918 Spanish Flu pandemic were between the age of 14 and 40.[35] Furthermore, in the United States during the recent 2009 H1N1 pandemic, individuals under 30 years of

[27] Public Health Agency of Canada, "Lessons Learned Review: Public Health Agency of Canada and Health Canada Response to the 2009 H1N1 Pandemic.", Section 3.8
[28] UK Civil Contingencies Secretariat, "Identifying People Who Are Vulnerable in a Crisis."
[29] UK Civil Contingencies Secretariat.
[30] Katz et al., "Immunity to Influenza: The Challenges of Protecting an Aging Population."
[31] Adams et al., "Aging Disaster: Mortality, Vulnerability, and Long-Term Recovery among Katrina Survivors."
[32] Ichiseki, "Features of Disaster-Related Deaths after the Great East Japan Earthquake.", 204
[33] McClelland et al., "Psychological and Physical Impacts of Extreme Events on Older Adults: Implications for Communications."
[34] Katz et al., "Immunity to Influenza-the Challenges of Protecting an Aging Population."
[35] Barry, "Observations on Past Influenza Pandemics.", S96

age represented 79% of the cases reported as of November 2009.[36] This potential for an atypical profile of risk during an influenza pandemic, as compared to seasonal influenza, may create a challenge for policymakers and planners in effectively communicating to the public. In this case, policymakers will need to tailor messaging to reach a group that wouldn't typically see themselves as particularly at-risk or vulnerable to influenza and who may also consider themselves to be healthy in general. This challenge requires further examination of public perceptions of risk and likely responses to a pandemic with a view to informing the preparation of official pandemic flu communications.

1.3.3 Security Implications of Pandemic Influenza

Pandemic influenza is not solely a public health issue but, rather, represents a crossroad between health and security. Security is often ill defined; however, it can broadly be categorised as: 'the state of being protected or safe from harm'.[37] In the 20th century, the 1918 Spanish flu and the AIDS epidemic accounted for casualties at a level that 'terrorists and dictators can only dream of'.[38] World War One resulted in 17 million deaths, the Spanish flu had a death toll of between 20-50 million.[39] Both are tragedies with an extraordinary loss of life but, equally, both also represent security threats.

In the Middle Ages in Europe, plague is believed to have caused a 30-60% reduction in the population[40] and 300 million people fell victim to smallpox in the 20th Century.[41] Equally, the use of biological agents as a security risk is not new. From the Mongol use of plague corpses as catapult fodder at Kaffa in 1346[42] to the 2001 Amerithrax attacks, the use of plague and pestilence as a weapon has a long history. The threat of weaponisation of biological or bacteriological substances and their subsequent use in conflict prompted the development of the Biological

[36]Yang, "Predicting Young Adults' Intentions to Get the H1N1 Vaccine: An Integrated Model.",69
[37] Merriam-Webster, "Security."
[38]The Economist, "The World's Deadliest Bioterrorist."
[39] World Health Organization, "Pandemic Influenza Risk Management: WHO Interim Guidance."
[40] Austin Alchon, *A Pest in the Land: New World Epidemics in a Global Perspective*., 21
[41] Flight, "Smallpox: Eradicating the Scourge."
[42]Mayor, *Greek Fire, Poison Arrows and Scorpion Bombs*., 119

Weapons Convention (BWC) that entered into force in 1975.[43] The BWC sought to curtail state development of biological weapons and to create a norm against their use in conflict. Whilst the efficacy of this agreement can be debated, particularly given the lack of verification protocols and lapses such as the Sverdlovsk anthrax incident in 1979, its existence demonstrates a willingness on the part of many states to renounce the use of biological weapons. Although the BWC represents an important step in protecting the world from lethal disease, it represents only one half of the threat. Through social norms and treaty conventions, state use of biological weapons has been largely constrained however, the natural development and spread of illness remains a serious risk to human health.

The UK government has therefore recognized the security threat posed by pandemic influenza. A 2014 report by Parliament on the National Security Strategy recommended that 'the scope of the next NSS be wide, encompassing resilience, deterrence and defence; and also emerging risks, such as pandemics and climate change, which threaten international order'.[44] This sentiment is echoed in the 2015 UK National Risk Register which identifies pandemic influenza as 'the most significant civil emergency risk'.[45] Internationally, the 2010 US National Security Strategy singled out pandemic as a threat and hazard alongside terrorism, natural disasters and large-scale cyber-attacks[46] and a 2007 WHO report referred to pandemic influenza as 'the most feared security threat'.[47]

The recent H1N1 pandemic accounted for a comparatively low estimated excess mortality worldwide (between 100,000 and 400,000) and governments have been accused of over-reacting in response to the H1N1 pandemic[48]. What is often

[43] United Nationa Office for Disarmament Affairs, "The Biological Weapons Convention."
[44]House of Lords and House of Commons-Joint Committee on the National Security Strategy, "'The Next National Security Strategy' First Report of Session 2014-2015.", 11
[45] UK Cabinet Office, "National Risk Register of Civil Emergencies.", 14
[46] US Government, "National Security Strategy May 2010.", 18
[47] World Health Organization, "The World Health Report 2007 A Safer Future: Global Public Health Security in the 21st Century.", 45
[48] Taylor et al., "Crying Wolf? Impact of the H1N1 2009 Influenza Pandemic on Anticipated Public Response to a Future Pandemic.", 563

forgotten is that the prior two pandemics (1957 and 1968) both resulted in between 1-4 million in excess mortality and the 1918 Spanish Flu, which was also driven by H1N1 virus, resulted in between 20-50 million fatalities.[49] The 2011 UK Influenza Pandemic Preparedness Strategy concluded that, 'There are no grounds for complacency and any presumption that the relatively mild H1N1 (2009) influenza pandemic is representative of future pandemics is dangerous'.[50]

The costs associated with a pandemic are not just limited to human lives. The economic ramifications of such events can be widespread and substantial. The 2014 Ebola outbreak in West Africa is estimated to have cost Guinea, Liberia and Sierra Leone $2.2 billion USD in lost economic growth.[51] The World Bank has estimated that from 1997-2009 six outbreaks of deadly zoonotic diseases (such as Ebola, SARS, Avian and H1N1 influenza) resulted in an estimated $80 billion in economic losses. Should an airborne 1918-type pandemic hit today, it could kill an estimated 33 million people and cause $4 trillion USD (5% of global GDP) in economic costs.[52]

The threat potential of an influenza pandemic is clear. The recent debate over H5N1 research serves as a prime example. H5N1 (also known as avian influenza) is a highly infectious influenza variant that infects birds. Since 2003 there have been over 600 cases of human illness (animal to human transmission) reported in Asia and the Middle East with a mortality rate of around 60%.[53] Although the mortality rate for H5N1 is quite high, at present infection with H5N1 occurs only through contact with infected poultry. There is, however, the possibility that the virus could mutate and become transmissible from human to human.[54]

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[49]World Health Organization, "Pandemic Influenza Risk Management: WHO Interim Guidance."
[50] UK Department of Health Pandemic Influenza Preparedness Team, "UK Influenza Pandemic Preparedness Strategy.", 13
[51] The World Bank, "World Bank Group Ebola Response Fact Sheet."
[52] The World Bank.
[53] US Department of Health and Human Services, "H5N1 Avian Flu-H5N1 Bird Flu."
[54] Briseno and England, "Science and Security: The Moratorium on H5N1 'Gain-of-Function' Experiments."

Recognizing the risks associated with potential H5N1 mutations, researchers began conducting "gain of function" experiments (positively modifying a trait of the original virus such as ease of transmission or virulence) related to H5N1.[55] The risks and benefits of increasing the lethality of a pathogen in order to get ahead of future deadly mutations as well as the need for a safe way to share the results prompted an intense debate on the ethics of these actions. Scientists agreed to a yearlong research moratorium starting in January 2012[56] however, this ended, in part due to concerns that, while they discussed the issue, the virus was continuing to mutate.[57]

Courtesy of vaccination, improved knowledge of public health practices, and, in many parts of the world at least, sanitary living conditions, several of the major historical 'killers' such as smallpox, polio and plague have been either eradicated, or a treatment has been developed. Nevertheless, despite, substantial progress in the control and curtailing of serious infectious diseases, pandemic influenza remains an ever-present threat. The unpredictability of a pandemic, both in strain, severity and timing of occurrence, creates an additional challenge in planning for and mitigating a future pandemic.

1.3.4 Importance of Communication in Emergency Preparedness and Response

The importance of communicating with the public has been widely recognized and governments, for example, have expressed a need to ensure that effective communication, both in terms of accessibility, capability and content is in place. In 2015, former UK Prime Minister David Cameron created a Civil Service award for clarity, stating that 'All our communications with the public should be human, clear, helpful and professional'.[58] Additionally, the UK Civil Contingencies Act 2004 outlines the responsibility of emergency responders to communicate with the public as, 'a well-informed public is better able to respond to an emergency and to

[55] Briseno and England.
[56] Briseno and England.
[57] Munro, "Controversial Lab-Made Super-Flu Experiment Gets Green Light despite Bioterrorism Fears."
[58] UK Civil Service, "The Prime Minister Introduces a Civil Service Award for Clarity."

minimise the impact of the emergency on the community'.[59] Equally, the Communications Policy of the Government of Canada states that, 'modern government requires the capacity to respond effectively over multiple channels in a 24-hour, global communications environment.'[60] Accordingly, in Canada between 2006-2013, public service communications staff increased by 15.3%.[61] In the context of pandemic planning, the importance of communication has not been lost, with pandemic planning documents from both UK and WHO (amongst many others) specifically emphasising the importance of communication.[62]

Communication is a key element to effective preparedness and response in the face of pandemic influenza. The UK review of the 2009 H1N1 pandemic states that, 'clear, consistent and co-ordinated messaging across the full range of communication channels, tailored to the needs of specific audiences, is crucial to maintaining the public trust, compliance and support essential to the effective management of a pandemic'.[63] The Public Health Agency of Canada H1N1 Lessons Learned report echoes this sentiment and stresses that public communication is necessary not only to encourage citizens to take necessary action but also to build trust in the government response.[64] OECD guidelines on the management of critical risks emphasise the need to raise awareness to mobilise households and provide them with the information they need to take protective measures.[65]

Communication, when done effectively, not only informs the public and empowers them to adopt protective behaviours but, in so doing, it can prevent additional strain being placed on existing infrastructure. For example, In September 1987, in

[59] UK Cabinet Office, "Chapter 7: Communicating with the Public; Revision to Emergency Preparedness."
[60] Treasury Board of Canada Secretariat, "Communications Policy of the Government of Canada."
[61] The Canadian Press, "Information Services Staff Has Grown 15% under Harper."
[62] Public Health England, "Pandemic Influenza Response Plan"; World Health Organization, "Pandemic Influenza Preparedness and Response WHO Guidance Document."
[63] Hine, "The 2009 Influenza Pandemic: An Independent Review of the UK Response to the 2009 Influenza Pandemic.", 130
[64] Public Health Agency of Canada, "Lessons Learned Review: Public Health Agency of Canada and Health Canada Response to the 2009 H1N1 Pandemic.", 54
[65] OECD, "Recommendation of the Council on the Governance of Critical Risks.", 6-7

Goiania Brazil a caesium-137 teletherapy unit was left behind when a private radiotherapy clinic moved locations, and was discovered by two individuals scavenging for scrap metal who brought it home to dismantle. This resulted in a small number of people becoming exposed to the caesium and becoming ill.[66] Emergency services were mobilized, areas of known contamination were evacuated and individuals potentially contaminated were brought to a local stadium that had been repurposed as a staging area. The authorities, however, did not communicate what had transpired resulting in uncertainty and large numbers of individuals, approximately 10% of the population or 112,000 people, arriving at the stadium. Of the 112,000 individuals who presented themselves for testing, only 249 were actually contaminated and the incident passed with only four fatalities. [67]

In contrast to the Goiania radiation incident where a lack of effective communication resulted in an overabundance of so-called 'worried well', is the November 2006 polonium poisoning of Russian dissident Alexander Litvinenko in London. [68] Unlike Goiania where large numbers of unexposed individuals appeared for testing, in the Litvenenko case several individuals contacted by the NHS with offers for testing declined and, individuals who had been present at the locations but were not offered testing were generally not upset. This is attributed to several factors including a lower perception of risk due to a belief that the incident was largely a targeted action and the use of effective communication that the risk was contained to affected areas.[69]

It should be noted that recognition of the need to communicate with the public is not restricted to the public sector; indeed, the classic examples of effective and failed risk/crisis communication come from the private sector with the comparison of the handling of the 1982 Tylenol product tampering, and the 1989 grounding of

[66] International Atomic Energy Agency, "The Radiological Accident in Goiania." 1, 11, 17
[67] International Atomic Energy Agency. 2, 26-31
[68] BBC News, "Who Was Alexander Litvinenko."
[69] Rubin et al., "Public Information Needs after the Poisoning of Alexander Litvinenko with Polonoim-210 in London: Cross Sectional Telephone Survey and Qualitative Analysis."

the Exxon Valdez tanker.[70] When Johnson and Johnson received reports that several deaths in Chicago were the result of someone putting cyanide into Tylenol tablets, they immediately acted by warning the public, recalling the product, offering a reward to capture the killer, and by modifying the packaging to be tamper resistant. In doing so, they were able to show a commitment to resolving the problem and maintain public trust.[71] In comparison, when the Exxon Valdez grounded in Prince William Sound, Alaska in 1989, spilling millions of gallons of oil into the water, the company did not react quickly, failed to communicate with the public, and even attempted to place blame on other actors such as the Coast Guard, with the incident eventually becoming the byword for poor risk communication.[72]

Trust, or credibility, is a key element in effective communication.[73] Without trust in the communicating individuals or organisations, communications may not only become ineffective, they may, in fact, increase perceptions of risk amongst the target audience.[74] It is therefore important that communication not only have the correct content and be delivered through the appropriate media, but also that the source of the information is deemed to be trustworthy by the public or specific population the communication is targeted at. An additional challenge is that trust is not static and the balance between trust and distrust is assymetrical.[75] This asymmetry is supported by a number of reasons such as negative (trust eroding) events tend to be more visible than positive (trust reinforcing) ones and are often considered to hold greater significance. Individuals are more likely to place higher values of credibility on bad news over good, and, once begun, distrust tends to beget or reinforce further distrust. [76]

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[70] Pauly and Hutchison, "Moral Fables of Public Relations Practice: The Tylenol and Exxon Valdez Cases."
[71] Pauly and Hutchison.
[7272] Pauly and Hutchison., Williams and Treadaway, "Exxon and the Valdez Accident: A Failure in Crisis Communication.", Heath and O'Hair, *Handb. Risk Cris. Commun.*
[73] Glik, "Risk Communication for Public Health Emergencies." pg. 35
[74] Glik.pg. 36
[75] Slovic, "Perceived Risk, Trust, and Democracy."pg. 677
[76] Slovic.pg. 678-67

While crisis communication traditionally presents in the aftermath of a crisis, risk communication centres around advising the public of a hazard to encourage them to make informed decisions.[77] Reynolds and Seegar outline distinguishing features of risk and crisis communication. Although the two communication models are similar, or have overlap, there are a number of key distinctions in many aspects, such as the use of mediated delivery systems and the use of technical experts as spokespeople. Risk communication, for example, is structured rather than reactive, involving long-term (pre-crisis) message preparation, and is principally persuasive rather than informative. Crisis communication involves information about the current state of a specific event rather than reducing the known probabilities of negative consequences.[78]

The nature of an influenza pandemic means that communication plans must incorporate elements of both risk and crisis communication, as it is taken as a certainty that an influenza pandemic will occur, but there is uncertainty over specific timing, duration, and severity. The public will likely want information on the state of affairs (how many cases/fatalities, and what the government is doing) but also want to know what actions they can take to reduce their risk (health protective behaviour). Furthermore, while pre-crisis messaging will be prepared, it is impossible to predict how a pandemic will unfold, and so responsive and reactive messaging will be required.[79]

The US Centres for Disease Control (CDC) sidestep the division between risk and crisis communication through the use of a Crisis Emergency Risk Communication model (CERC). CERC was developed in the wake of the September 11th and Anthrax attacks in the United States. The September 11th attacks required the government to communicate in an environment of great uncertainty, high perception of threat, and limited response time. The role of the CDC within this was limited (testing and monitoring air quality, providing advice to first responders and mental health

[77] Reynolds and Seegar, "Crisis and Emergency Risk Communication as an Integrative Model."
[78] Reynolds and Seegar.
[79] Reynolds and Seegar.

support), and in keeping with the supportive role the agency had played in previous disasters. The Anthrax attacks, on the other hand, being biological in nature, meant the CDC was given a far more primary role, and highlighted the communication challenges and shortcomings of the agency from the use of multiple spokespeople, inaccurate predictions and poor response time. From this experience, CERC was created.[80]

CERC promotes six key principles in communicating with the public: timeliness, accuracy, credibility, empathy, empower the public to take action, and respect. It also incorporates both crisis and risk communication into an integrative approach meant to cover the life-cycle of a health emergency.[81] There are five stages to the CERC model: Pre-crisis (focused on preparedness), Initial (rapid communication designed to reassure and inform), Maintenance (keep the public up to date with accurate information), Resolution (continued communication; starting to move toward recovery and rebuilding) and Evaluation (lessons learned).[82] This type of communication model is ideally suited to communicating with the public during an influenza pandemic as it provides guidelines with the flexibility to adapt to a long-term health event with a series of unknown variables, such as: severity and virulence of the strain, at-risk populations, and resulting recommended protective behaviour.

Communication during an influenza pandemic is necessary to keep the public informed. Effective communication is also necessary to improve health outcomes. When done successfully, communication has been shown to help maintain confidence or public trust, provide reassurance and encourage the adoption of protective behaviours.[83] During the 2009 H1N1 pandemic, the Director General, Communications for the Department of Health in Canada testified before a

[80] Seegar, Reynolds, and Sellnow, "Crisis and Emergency Risk Communication in Health Contexts: Applying the CDC Model to Pandemic Influenza."
[81] US Centers for Disease Control and Prevention, "CERC: Introduction."
[82] US Centers for Disease Control and Prevention.
[83] Rogers et al., "Mediating the Social and Psychological Impacts of Terrorist Attacks: The Role of Risk Perception and Risk Communication."

Parliamentary committee about the usefulness of communication to promote behaviour change.

> "…in our communication strategy the outcome is very much the ending for us, which is a behavioural outcome ultimately. So, for example, in the spring we were testing very much people's levels of awareness and behaviour around handwashing and cough etiquette and the infection-prevention behaviours we wanted them to adopt. Throughout the spring we could actually track changes in people's behaviours. In the early days we saw a tracked change in behaviour around handwashing, and coughing in the sleeve was slow. It's really amazing, you could see a change in behaviour as you changed your messaging, and when you changed your tactics as well."[84]

In the event of a crisis, governments are expected to provide accountability and leadership. They are charged not only with providing support and information to guide the public through the crisis but also with preventing a recurrence (when and wherever possible) while defending perceived gaps in policy and planning.[85] Whether a crisis is perceived as being well or poorly managed can have great effect on a Government's term in office. Failure to communicate effectively and to manage and mitigate the effects of a crisis can be detrimental to a leader and the government.[86] During the 2009 H1N1 pandemic, in anticipation of higher-than-average casualty rates, Canadian health authorities delivered body bags to rural and remote Aboriginal communities in advance of winter weather potentially rendering accessibility to the communities difficult. By not communicating the context ahead of time, however, this action was interpreted as reflecting inaction and unwillingness by the government to prevent casualties in these communities.[87]

This pressure on government to act can be further complicated by a lack of clear and executable options. In the event of an influenza pandemic, particularly in the early stages when the scope may not yet be known and a vaccine is in the nascent stages of development, effective action can still be taken. Preventing the spread of influenza is not just about vaccination; actions such as handwashing, respiratory

[84] Standing Committee on Health-Parliament of Canada-Committee Hansard, "Testimony by Elaine Chatigny, Director General, Communications, Department of Health."
[85] Boin et al., *The Politics of Crisis Management: Public Leadership under Pressure*., 1
[86] Boin, McConnell, and Hart, "Governing after Crisis.", 8
[87] CBC News, "Health Canada Apologizes for Body Bags."

hygiene and social isolation can do a great deal to prevent the spread of pandemic influenza and are excellent public health practices in general.[88]

When used correctly, communication provides not only an outlet for emergency planners, public health authorities and Government to control the spread of the disease, but also provides an opportunity to build trust with the public and establish pathways for information sharing that can be used throughout the crisis. A lack of clear, consistent and accurate communication, however, produces the opposite effect. During the US Anthrax incident in 2001, a Congressional staffer reported, "You hear from CDC [Centers for Disease Control and Prevention], you hear from HHS [Health and Human Services], you hear from the Mayor's office; and the stories shift from day to day as to what the threat is."[89] Uncertain, contradictory or unclear communication is far more likely to create distrust in the capability of the authorities to manage an emergency and to make the public less likely to cooperate with public health measures.[90]

The focus of this thesis is on communicating actionable protective steps in the most effective manner to encourage protective behaviours in a pandemic. A key element to this is ensuring that communication activities are not only clear and consistent, but also ensure that necessary information is conveyed.[91] Additionally, understanding the perceptions and assumptions of the target population is necessary to increase the efficacy of the communication; in effect, ensuring the message resonates with its intended audience. To achieve this an understanding of both context and content of messaging is critical. Given the key role that communication plays in effective emergency management, it is important to examine ways to improve communication in order to lessen the impact of pandemic influenza and to promote uptake of protective behaviours.

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[88] US Centers for Disease Control and Prevention, "Coughing & Sneezing."
[89] Stone, "The 'Worried Well' Response to CBRN Events: Analysis and Solution Title.", 8
[90] Sheppard et al., "Terrorism and Dispelling the Myth of the Panic Prone Public.", 227-228
[91] Hine, "The 2009 Influenza Pandemic: An Independent Review of the UK Response to the 2009 Influenza Pandemic.", 131

1.4 Overview of the Thesis

This thesis examines how communication can increase uptake of protective behaviour amongst at risk or vulnerable populations during an influenza pandemic. First, a review of the existing literature concerning impact of pandemics and other disasters on vulnerable and at-risk groups is presented. To take into account practical realities around pandemic planning, interviews were conducted with emergency planners responsible for universities, facilities catering to older adults, London boroughs, and the UK in order to gain a better understanding of existing strategies and challenges in preparing for a future pandemic, particularly in regard to communicating with at-risk populations. These were supplemented by a review of published pandemic planning guidance by the authorities in London, the UK, as well as international partners.

The research presented in this thesis is focused on an influenza pandemic from a London population perspective. London is not only the political and financial centre of the UK but also represents a high population density area with a robust public transit network. It is a culturally, ethnically, and linguistically diverse city with multiple points of global connection (e.g. Heathrow and Gatwick Airports, Eurostar terminal). These characteristics create planning challenges around the potential ease of the spread of a new pandemic virus, and the potential severity of its impact on the population.

To understand pandemic risks from the perspective of the London population, a series of individual and group interviews were conducted with younger adults (operationalised as university students) and older adult (>70) participants to determine perceptions of risk and vulnerability, behavioural intentions in a pandemic and information needs. This led to the development and testing of a communication intervention with older adult participants examining their behavioural intentions and willingness to accept public health advice challenging typical perceptions of risk during a pandemic.

In the first phase, older adults and younger adults were given a two-part scenario covering the early stages of a pandemic: the initial outbreak abroad (Greece) and the declaration of a pandemic by the WHO (by which point the virus had reached the UK and fatalities had occurred). Participants were asked to comment on their knowledge of pandemic influenza, perceptions of risk, likely behavioural responses and communication needs. These data were then analysed to identify areas where communication could be used to inform and improve behavioural responses and associated health outcomes. For example, whilst pandemic influenza often presents an atypical morbidity/mortality pattern, most participants felt that those most at-risk in a future pandemic would be the same categories as those at-risk to seasonal influenza. The second phase of the research built on these findings and was designed to test participant willingness to follow official advice regarding vaccination where the risk groups did not fit with their expectations. This phase was conducted with older adults and examined their responses to not being included in a vaccine priority list, and the effect that additional information had on their acceptance of this and intention to follow the associated guidance. Furthermore, as with the first phase of research, participants were also asked about their knowledge of pandemic influenza, perceptions of risk, likely behavioural responses and communication needs.

This chapter provides the background and context for the research presented in this thesis. In the next Chapter, existing research concerning vulnerable or at-risk populations and pandemic influenza as well as current pandemic planning and challenges is reviewed. Chapter 3 examines current practice in the management of vulnerable and at-risk populations in pandemic scenarios. Interviews were conducted with emergency planners at national, local (London), and institutional (university and adults social service providers) levels. This chapter, therefore, incorporates both a review of existing pandemic planning guidelines (from a local, national, and international perspective) and also interviews with emergency planning practitioners. The theoretical background to this research is detailed in Chapter 4, and Chapter 5 provides the methodological structure of this research. The outcomes of the three sets of individual and group interviews (Phase 1-older

adults, Phase 1-younger adults, and Phase 2-older adults) are presented in Chapters 6 to 8. Finally, the outcomes and implications suggested by this research are presented and discussed in Chapter 9.

1.5 Chapter Summary

Recognizing the risk of and potential threat posed by a future pandemic, this thesis aims to provide a better understanding of the perceptions, behavioural intentions and likely communication needs of potentially at-risk groups in order to improve official communication with these populations during influenza pandemics. Pandemic influenza is recognized as a grave risk to health security. The uncertainty over timing, severity, and strain create planning difficulties, particularly around the identification or at-risk or vulnerable populations as, unlike seasonal influenza, pandemic influenza can affect atypical populations such as younger adults. Communication can reduce the uncertainty around the event and, in so doing, provide reassurance and direction to the affected population.[92] Health outcomes can be improved through increased uptake of protective behaviours, but the adoption of these behaviours will require effective communication on the part of responding authorities. In the next chapter, the existing literature concerning communicating with at-risk or vulnerable populations during an influenza pandemic will be reviewed.

[92] Reynolds, "Crisis and Emergency Risk Communication: Pandemic Influenza.", 100

2 Chapter II: Pandemic Influenza and At-Risk Populations: Risk, Response and Communication Overview

2.1 Chapter Overview

This chapter will examine current literature around risk, behavioural responses and the communication needs of at-risk groups during an influenza pandemic. A review of the literature was conducted through a database search using key word combinations. This was supplemented through examination of bibliographical references.

2.2 Introduction

While extreme events such as natural disasters and public health crises broadly impact communities and societies, they also represent unique challenges for specific population groups who may be more at risk. These at-risk population groups have often been categorized based on geography[93], ethnicity[94], or age[95]. The 2008 UK Cabinet Office report 'Identifying people who are vulnerable in a crisis' recognizes thirteen vulnerable groups such as 'older people', 'pregnant women', and individuals who may be mentally or cognitively impaired.[96] Planning for vulnerable or at-risk populations can be seen throughout emergency or extreme event planning guidance. The UK's climate change adaptation plan, for example, considers how to reduce the probable effects of climate change on at-risk population groups.[97] Whilst risk and vulnerability are not necessarily static concepts, there are a number of population groups that are frequently classed as vulnerable, in particular, older adults who tend to be considered as requiring

[93] Yazgan, Dedeoglu, and Yazgan, "Disability and Post-Traumatic Psychopathology in Turkish Elderly after a Major Earthquake."
[94] Strug, Mason, and Auerbach, "How Older Hispanic Immigrants in New York City Cope with Current Traumatic Stressors: Practice Implications."
[95] Suar, Mishra, and Khuntia, "Placing Age Differences in the Context of the Orissa Supercyclone: Who Experiences Psychological Distress?"
[96] UK Civil Contingencies Secretariat, "Identifying People Who Are Vulnerable in a Crisis."
[97] UK Department for Environment Food & Rural Affairs, "The National Adaptation Programme: Making the Country Resilient to a Changing Climate."

particular attention or care in an emergency. This classification is understandable given the often disproportionate effect of extreme events on older adults. Recent natural disasters such as Hurricane Katrina and the 2011 earthquake in Japan, have demonstrated the extent to which older adults can suffer from disproportionate morbidity and mortality rates. Older adults (>60) made up 15% of the pre-Hurricane Katrina population of New Orleans, however approximately 75% of the bodies found were from this population group.[98] In March 2011, an estimated 95% of fatalities resulting from the Great East Japan earthquake were adults above the age of 60.[99] Although older adults are typically more vulnerable to disaster[100], by virtue of having reached an older age, they are also survivors. Many older adults are as capable as the average individual and age, therefore, does not automatically equate to vulnerability. Resilient older adults can be of great assistance during an extreme event, for example, by helping younger populations better understand how to cope with stressful situations.[101]

Furthermore, whilst older adults represent a 'typical' category of risk or vulnerability, there may well be situations where an atypical risk profile is present. Some studies on flooding, for example, have found middle-aged men to be most at risk, however this is attributable to risk-taking behaviour such as trying to swim through rivers during a flood.[102]

Pandemic influenza provides a novel opportunity to study communication challenges and vulnerability for a number of reasons. Unlike most natural disasters that require specific geographical or meteorological conditions to develop, pandemic influenza is global; the challenge of managing pandemic influenza is not

[98] Adams et al., "Aging Disaster: Mortality, Vulnerability, and Long-Term Recovery among Katrina Survivors."
[99] Ichiseki, "Features of Disaster-Related Deaths after the Great East Japan Earthquake."
[100] Sakauye et al., "AAGP Position Statement: Disaster Preparedness for Older Americans: Critical Issues for the Preservation of Mental Health."
[101] Chaitin et al., "'I May Look 75, but I'm Really a Pioneer': Concept of Self and Resilience among Israeli Elder Adults Living in a War Zone."
[102] Nishikiori et al., "Who Died as a Result of the Tsunami? Risk Factors of Mortality among Internally Displaced Persons in Sri Lanka: A Retrospective Cohort Analysis."

bounded by national borders. An estimated fifth of the world's population was affected during the 1918 'Spanish Flu' pandemic, the 1968 pandemic claimed between one and three million lives, the 1958 pandemic killed approximately one million and estimates of the 'Spanish Flu' death toll vary between 50 and 100 million people dead. While the recent 2009 H1N1 pandemic featured a much lower death toll (14,000) this was largely due to a much less virulent strain of the virus than feared and most experts agree the threat remains and a more severe strain of flu is no less likely in the future.[103] As well, although older adults are particularly vulnerable to seasonal influenza, pandemic influenza often results in high morbidity and mortality amongst otherwise less-affected populations, including younger adults.

The focus of this thesis is on communicating risk to vulnerable populations during an influenza pandemic, however a number of the articles identified in the literature review addressed the perceptions and behaviour of the general population. These articles have been included in the literature review for several reasons. Firstly, their inclusion provides a broader understanding of human perception and response to the threat of an influenza outbreak or, in the case of the post-2009 H1N1 studies, the public perceptions and response to an actual outbreak. Secondly, including these studies allows for a larger number of international examples, which not only provide additional information on general perceptions and reactions but also demonstrate how different countries manage infection prevention and prioritize measures, as well as how different national groups may be willing to accept certain preventive measures. Finally, broad inclusion criteria provide a clearer picture of the work that has been conducted in the field of influenza perceptions and communications to support the identification of any research gaps.

Through the use of journal databases (PsychInfo and Medline) a search was conducted using three main key word categories: age terms (ie: old, young, senior,

[103] Crosier, McVey, and French, "By Failing to Prepare You Are Preparing to Fail': Lessons from the 2009 H1N1 'swine Flu' Pandemic."

student, age), condition terms (ie: behaviour, risk, perception, communication), and circumstance terms (ie: pandemic, influenza). Results were limited to English language and assessed for relevance based on title and abstract. These results were then supplemented with additional articles based on bibliographical references as well as literature passed on by colleagues.

2.3 Risk Perceptions and Behavioural Responses to Pandemic Influenza in the General Population

Many of the studies examined addressed issues around general population understanding of influenza –for example, what it is, and the extent to which it is a threat. Determining knowledge of influenza is a key element to assessing communication needs as well as the extent to which behavioural recommendations might be acted on. A Dutch study published in 2010 found that only 46% of participants indicated familiarity with the concept of an influenza pandemic. Perhaps more concerning is that after having been provided with a definition, only 21% reported being completely familiar and 38% mostly familiar.[104] This challenge is not unique to the Netherlands. A study published in 2012 examining general perceptions in Australia found that, although intended compliance with behavioural recommendations such as social isolation when ill and vaccination were higher during the 2009 H1N1 event, pandemic literacy did not greatly improve.[105]

Experience can influence perceptions of risk and the milder-than-anticipated 2009 pandemic, has both positively and negatively impacted knowledge and perceptions of risk in a future pandemic. Individuals are more likely to assess the likelihood of an influenza pandemic occurrence as high, however, they are also more likely to rate the severity of such an event as low.[106] Whilst people are more open to the possibility of a pandemic and not dismissing the threat as a thing of the past, the lack of concern regarding severity, however, could reduce willingness to employ

[104] Kok et al., "Behavioural Intentions in Response to an Influenza Pandemic."

[105] Marshall et al., "Awareness, Anxiety, Compliance: Community Perceptions and Response to the Threat and Reality of an Influenza Pandemic."

[106] Taylor et al., "Crying Wolf? Impact of the H1N1 2009 Influenza Pandemic on Anticipated Public Response to a Future Pandemic."

protective measures such as respiratory hygiene (covering mouth/nose with tissue or arm when coughing or sneezing, and not spitting, hand-washing, social isolation (particularly when ill) and vaccination. Prior to a vaccine becoming available, non-pharmaceutical interventions (NPI) such as hand washing, respiratory hygiene and social distancing are recommended methods of infection prevention.[107] Washing hands with soap and water, for example, has been shown to be an effective method to remove pathogens; an important step since studies have shown the influenza virus can survive on nonporous surfaces for at least 24 hours.[108] Further, the use of antivirals in both the prevention (as prophylaxis) and the early treatment of pandemic influenza can limit the impact of the pandemic; particularly in the initial stages when a vaccine is not yet available.[109] Not employing these and other protective measures may well risk allowing a future influenza pandemic to gain a foothold and prove a more deadly force than might otherwise have been the case.

This relationship between perceptions of severity and willingness to take action is also compounded by perceptions of the efficacy of action - both in terms of response efficacy (the effectiveness of the recommended course of action) as well as self-efficacy (the ability of the individual to carry out this recommendation). Bish and Michie (2010) reviewed studies conducted in the UK, Hong Kong and China that demonstrate that perceptions of disease and infection severity (H1N1, SARS and Avian Flu) were generally correlated to willingness to adopt protective measures such as handwashing and wearing masks.[110] Likewise, additional studies have demonstrated a strong relationship between belief in the efficacy of a particular protective behavioural action (i.e. handwashing or vaccination) and a willingness to engage in it; for example, a Turkish study, which found perceptions around the efficacy of a behaviour to be the most important factor when predicting

[107] Zottarelli et al., "College Student Adoption of Non-Pharmaceutical Interventions during the 2009 H1N1 Influenza Pandemic: A Study of Two Texas Universities in Fall 2009."
[108] Godoy et al., "Effectiveness of Hand Hygiene and Provision of Information in Preventing Influenza Cases Requiring Hospitalization."
[109]Ghosh and Heffernan, "Influenza Pandemic Waves under Various Mitigation Strategies with 2009 H1N1 as a Case Study."
[110] Bish and Michie, "Demographic and Attitudinal Determinants of Protective Behaviours during a Pandemic: A Review."

behavioural responses whether recommending protective behaviours (ie: handwashing or avoiding shaking hands), avoidance behaviours (ie: avoiding public transport) or ineffective behaviours (ie: avoiding the outdoors or keeping the room temperature higher than usual).[111]

The link between perceptions and action has been further demonstrated with vaccination as there is indication that, internationally, perceptions of low risk are linked to poor rates of vaccination.[112] Concerns over safety of a vaccine, particularly when it relates to illness that are no longer common, have the potential to outweigh concerns over infection. A US study found that adults were less likely to vaccinate for pandemic influenza than for seasonal influenza largely as a result of safety concerns.[113] Knowledge can be a useful tool to counter false narratives and alleviate concerns. A UK study examining adult intentions to vaccinate during 2009 H1N1 demonstrated that knowledge of vaccination may not be particularly high. This study found that slightly less than 56% of participants were aware that H1N1 vaccination does not protect again seasonal flu and 53% recognised that the vaccination cannot cause H1N1.[114] This may demonstrate an area where improved communication could increase vaccination rates.

Perceptions of vaccine safety, however, are not the only factor influencing intentions to vaccinate as perceptions of the severity of a pandemic as well as vaccine efficacy can also greatly influence behavioural intentions (and subsequent action) to vaccinate. Positive perceptions regarding efficacy, control and susceptibility were shown to be linked to intent to receive the H1N1 vaccination.[115] A Greek study found that a significant portion of study respondents (63%, with 15%

[111] Gaygisiz et al., "Individual Differences in Behavioral Reactions to H1N1 during a Later Stage of the Epidemic."
[112] Bish et al., "Factors Associated with Uptake of Vaccination against Pandemic Influenza: A Systematic Review."
[113] Maurer, Uscher-Pines, and Harris, "Perceived Seriousness of Seasonal and A(H1N1) Influenzas, Attitudes toward Vaccination, and Vaccine Uptake among U.S. Adults: Does the Source of Information Matter?"
[114] Myers and Goodwin, "Determinents of Adults' Intention to Vaccinate against Pandemic Swine Flu."
[115] Myers and Goodwin.

as yet undecided) intended to decline vaccination, largely over concerns relating to the safety of the vaccine but also influenced by perceptions of low risk of infection and of illness severity.[116] Bults et al (2011) also noted the importance of severity in the findings of their study with older age, high anxiety, higher perceptions of severity, efficacy of measures, self-efficacy and trust in government all associated with intention to adopt recommended measures.[117]

Willingness to adopt protective measures before or during a pandemic is influenced by a variety of factors. It should be noted that 'protective measures' is a broad category ranging from non-pharmaceutical interventions (NPI) such as respiratory hygiene (proper cough and sneeze etiquette), mask wearing, handwashing and social isolation to pharmaceutical interventions including vaccines and antivirals- though for the purposes of this thesis, research relating to antivirals has been excluded, as this thesis will focus on pre-infection behaviour interventions. While antivirals can be used for prophylaxis, unlike vaccines or NPI, they are used for treatment of infection. In addition, the timing of an incident and local conditions can affect intention to adopt protective measures. For example, surveys conducted in May 2009 in the UK and Mexico found vastly different results around uptake of protective behaviours such as handwashing. However, at that time, the UK had yet to experience its first H1N1 related death while Mexico had been in the throes of H1N1 for some weeks.[118]

Behavioural changes that are adopted and perceptions held at the start or during a pandemic may not be sustained in the long-term. A Spanish study identified that respondents indicated a more positive view (safety and efficacy) of the vaccine a year after the pandemic (perceptions of safety increased from 41.2% to 63.0% and

[116] Sypsa et al., "Public Perceptions in Relation to Intention to Receive Pandemic Influenza Vaccination in a Random Population Sample: Evidence from a Cross-Sectional Telephone Survey."
[117] Bults et al., "Perceived Risk, Anxiety, and Behavioural Responses of the General Public during the Early Phase of the Influenza A (H1N1) Pandemic in the Netherlands: Results of Three Consecutive Online Surveys."
[118] Tooher et al., "Community Knowledge, Behaviours and Attitudes about the 2009 H1N1 Influenza Pandemic: A Systematic Review."

efficacy from 44.4% to 67.7%). However, whilst many had adopted better hand and respiratory hygiene practices during the pandemic, continued practice of these fell approximately 20% (from 37.1% to 16.7% and 56.4% to 36.5%).[119] As Bish and Michie demonstrate, several studies have linked perceptions of susceptibility to a variety of behavioural changes including: hand-washing, mask-wearing, respiratory hygiene, improving immunity through healthy choices and vaccination.[120]

Self-efficacy, either in terms of perceptions or practical considerations, can impede the uptake of protective behaviours. Specialised masks such as N95 respirators requires fit-testing and creates the potential for improper use which may undermine the efficacy of this measure.[121] A British study found that participants were open to the idea of respiratory hygiene measures but were concerned about practical barriers such as being caught by surprise by a cough/sneeze, or not having access to tissues or waste bins.[122] An observational study in New Zealand during 2009 H1N1 reinforced this conclusion and found that, despite public health advisories and mass media coverage of pandemic deaths, discouraged behaviour such as uncovered coughing was commonplace.[123]

An additional factor which can influence the effectiveness of non-pharmaceutical interventions is the timing of implementation. This is particularly relevant with regard to social isolation measures as adherence to these measures can greatly affect the outcome of a pandemic. During the 1918 pandemic both St. Louis and Philadelphia implemented social distancing. In Philadelphia, authorities initially minimised concerns over the severity of the disease and allowed public gatherings to continue after the first cases were reported for a little over two weeks, at which

[119] Garcia-Continente et al., "Long-Term Effect of the Influenza A/H1N1 Pandemic: Attitudes and Preventive Behaviours One Year after the Pandemic."
[120] Bish and Michie, "Demographic and Attitudinal Determinants of Protective Behaviours during a Pandemic: A Review."
[121] Low, "Pandemic Planning: Non-Pharmaceutical Interventions."
[122] Morrison and Yardley, "What Infection Control Measures Will People Carry out to Reduce Transmission of Pandemic Influenza? A Focus Group Study."
[123] Barry et al., "Respiratory Hygiene Practices by the Public during the 2009 Influenza Pandemic: An Observational Study."

point the health services were inundated. St Louis, on the other hand, implemented social isolation measures two days after the first cases were reported. By acting earlier, St Louis was able to considerably reduce the scope of epidemic it faced compared to Philadelphia.[124] Social distancing measures can be effective but are significantly less effective if implemented after the fact. Mass social distancing measures also carry a risk if not followed through until the threat has waned or a vaccine is developed. If these measures are relaxed too early, it risks a second wave of the illness with a largely unexposed population. In the 1918 pandemic several US cities that had implemented non-pharmaceutical interventions quickly had lower mortality rates in the first wave of the pandemic but were then at greater risk during the second wave.[125]

It should be noted that social isolation is not limited to staying home from work when ill but also to avoiding exposure and limiting opportunities for the influenza virus to spread. For example, individuals who see their work as necessary to social functioning are more likely to insist on working. Medical professionals such as doctors and nurses are far more likely to believe they have a duty to work during pandemics than do hospital administrators; despite the latter having a necessary procedural role.[126] The mandatory closure of community venues, in particular religious institutions, can be controversial. Participants in one study highlighted that religious venues can be a place for information sharing and provide community support.[127]

Whilst social isolation can be an effective public health measure, it can be difficult to maintain. Over a third of participants in a Dutch study indicated that avoiding entertainment venues, public transportation and limiting shopping to the essentials would be feasible and 40% indicated they were willing to avoid health care professionals; though many were uncertain how long they could maintain

[124] Low, "Pandemic Planning: Non-Pharmaceutical Interventions."
[125] Low.
[126] Teasdale et al., "The Importance of Coping Appraisal in Behavioural Responses to Pandemic Flu."
[127] Baum, Jacobsen, and Goold, "'Listen to the People': Public Deliberation about Social Distancing Measures in a Pandemic."

avoidance of health care experts.[128] Maintaining non-pharmaceutical approaches, particularly those like social isolation that significantly disrupt everyday patterns over the long-term is an historical as well as contemporary challenge. As Morse indicates, even in the 'more obedient social climate' of 1918, citizens were not prepared to accept these restrictions indefinitely.[129]

For many, the idea of staying home from work during illness or to care for children in the event of school or childcare facility closures is considered to be a 'luxury'.[130] For lower income households or, arguably, any households living paycheque to paycheque, missing work may simply not be a viable economic option. The challenges or perceived barriers associated with staying home when ill are not isolated to economic considerations, although that is a recurrent and significant concern. A US study found that a sense of anxiety about work not getting done was a strong predictor of intent.[131]

Existing research suggests that the public is generally accepting of measures to prevent the spread of infection during an influenza pandemic however, behavioural intentions in a pandemic are influenced by a number of factors including perceptions of risk, behavioural efficacy, and self-efficacy. Having examined general risk perceptions and behavioural responses to pandemic influenza, it is important to narrow in on those attitudes and approaches specific to the target population groups of this study.

2.4 Risk Perceptions and Behavioural Responses to Pandemic Influenza in Older Adults

The majority of studies included in this review found greater pandemic awareness in older adults. A 2012 study examining community perceptions and response in relation to pandemic influenza found that older age was linked with greater

[128] Kok et al., "Behavioural Intentions in Response to an Influenza Pandemic."
[129] Morse, "Pandemic Influenza: Studying the Lessons of History."
[130] Baum, Jacobsen, and Goold, "'Listen to the People': Public Deliberation about Social Distancing Measures in a Pandemic."
[131] Teasdale et al., "The Importance of Coping Appraisal in Behavioural Responses to Pandemic Flu."

awareness about pandemic influenza.[132] These results were confirmed by a systematic literature review, conducted between 2011 and 2013 which found that older adults exhibited higher pandemic knowledge.[133] An Australian study found that older adults were more likely not only to have increased knowledge of pandemic influenza but were also more likely to adopt protective behaviours.[134] A review by Bish and Michie found results from several studies confirm that older adults are more likely to adopt protective behaviours, possibly as a result of feeling particularly susceptible to a pandemic. However, not all studies have had the same outcome.[135] In contrast, an American study conducted in Autumn 2009, several months into the H1N1 pandemic, found that adults over 65 years of age seemed the least aware of pandemic influenza despite being active news media consumers.[136] Furthermore, knowledge may not always equate to action. While the above-mentioned studies found increased likelihood of older adults adopting protective behaviours, these results were not universal. Older adults may also be inclined to wait before seeking care and, by so doing, jeopardize their health; for example, antiviral drugs can be used to treat influenza but are most effective if prescribed within 48hrs of the onset of symptoms, however in the UK research suggests that very few older adults will have visited a physician in the first 48hrs.[137]

A 2009 Dutch study found older adults were more likely to have higher 'perceived efficacy, self-efficacy and intention to comply with measures'.[138] An American study however, found that older adults were more likely than younger adults to oppose social distancing measures, and to support caring for the sick at home. The

[132] Marshall et al., "Awareness, Anxiety, Compliance: Community Perceptions and Response to the Threat and Reality of an Influenza Pandemic."
[133] Tooher et al., "Community Knowledge, Behaviours and Attitudes about the 2009 H1N1 Influenza Pandemic: A Systematic Review."
[134] Tooher et al.
[135] Bish and Michie, "Demographic and Attitudinal Determinants of Protective Behaviours during a Pandemic: A Review."
[136] Jehn et al., "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic."
[137] Fleming and Elliot, "The Impact of Influenza on the Health and Health Care Utilisation of Elderly People."
[138] Bults et al., "Perceived Risk, Anxiety, and Behavioural Responses of the General Public during the Early Phase of the Influenza A (H1N1) Pandemic in the Netherlands: Results of Three Consecutive Online Surveys."

researchers hypothesized the former may be the result of a different generational work ethic or that older adults are more lonely and reluctant to give up social connections through activities such as church. It was thought the latter might be due to concerns of hospitals as 'germ-filled'.[139] Although older adults tend to demonstrate greater knowledge of pandemic vaccination and greater intent to adopt and follow through on protective behaviours, when considering vaccination, the results are somewhat mixed. A review of vaccinations studies by Bish et al found that, although most report older age to be linked with intent to vaccinate, there have been some contrasting results demonstrating either no age effect or a greater intent among younger adults.[140]

Given that older adults are defined as an influenza-vulnerable group and the frequency of seasonal flu compared to pandemic, it is useful to examine seasonal flu vaccination rates among older adults. The EU Council, in 2009, encouraged Member States to seek an influenza (seasonal) vaccination target of 75% of at-risk groups including older adults, a number previously shared with the World Health Organization before the latter, in 2012, amended their recommendation to suggest coverage rates be determined at the domestic level due to varied resources and availability. Nonetheless, in 2007-2008, of 15 countries examined, only two states (UK and the Netherlands) exceeded the recommended 75% figure.[141] The Netherlands introduced a vaccination program for older adults in 1996 and, between 1993 and 2003, vaccine uptake increased by 40% while, at the same time, excess mortality due to influenza decreased by 35%.[142] Influenza vaccination rates vary greatly between countries. In 2009, 68.9% of older adults in the United States were vaccinated while vaccination rates in Canada have been reported at 55.2% and 31.1% in Hong Kong. Europe, by contrast, comprised national older adult

[139] Hilyard et al., "The Vagaries of Public Support for Government Actions in Case of a Pandemic."
[140] Bish et al., "Factors Associated with Uptake of Vaccination against Pandemic Influenza: A Systematic Review."
[141] Kovacs et al., "Medical and Economic Burden of Influenza in the Elderly Population in Central and Eastern European Countries."
[142] Kovacs et al.

vaccination rates varying from 1.8% to 82.1%.[143] A review examining the impact of social factors on vaccine uptake amongst older adults found that characteristics such as being unmarried, living alone, and being an immigrant contributed to a lower uptake of vaccination.[144]

Though not conclusive, older adults do seem to express greater pandemic awareness. It would also seem that older adults are more likely to adopt protective behaviours though this differs somewhat depending on the behaviour, as there are indications that older adults may be less inclined to seek medical assistance in a timely fashion when ill. Vaccination rates amongst older adults vary greatly by country with results indicating there is room for improvement. The next section will examine risk perception and behavioural responses amongst a younger adult population.

2.5 Risk Perceptions and Behavioural Responses to Pandemic Influenza in Younger Adults

Research into risk perceptions and behavioural responses to pandemic influenza in younger adults indicates that knowledge or awareness may not necessarily translate into action and that younger adults may hold misconceptions around issues of risk and vulnerability. A 2009 study found that perceptions of susceptibility and knowledge of pandemic influenza symptoms were important, but that perception of a public health threat was most closely connected to the adoption of non-pharmaceutical interventions in university students in the United States.[145] Younger adults may be inclined to dismiss risks associated with pandemic influenza due to a sense of invulnerability. Research on the effectiveness of H1N1 messaging and younger adults has found that, although prevention messaging may lead young adults to adopt certain non-pharmaceutical behaviours, vaccine uptake

[143] Zheng et al., "A Cross-Sectional Study of Factors Associated with Uptake of Vaccination against Influenza among Older Residents in the Postpandemic Season in Beijing, China."
[144] Jain et al., "Lower Vaccine Uptake amongst Older Individuals Living Alone: A Systematic Review and Meta-Analysis of Social Determinants of Vaccine Uptake."
[145] Zottarelli et al., "College Student Adoption of Non-Pharmaceutical Interventions during the 2009 H1N1 Influenza Pandemic: A Study of Two Texas Universities in Fall 2009."

may be limited.[146] Seale et al further demonstrated this sense of invincibility (and lack of pandemic influenza knowledge) in a 2010 Australian study. Many university students struggled to correctly define pandemic influenza and considered young children and the elderly to be the most vulnerable groups. The 'well educated' were viewed to be at least risk as were younger adults and teenagers due to being 'physically and socially healthy'.[147]

These findings were reinforced by a 2009 survey of university students in Australia found that, despite being among the group most often affected by pandemic influenza, younger adults (20-34) were among the least likely to consider themselves at risk.[148] A Canadian study also reported that this sense of invulnerability in younger adults extends to attitudes about peers with respondents reporting that they were less likely to be infected than their friends and, were it to happen, their symptoms would be less severe[149]. This may, in part, be attributed to past experience. For example an assessment of the threat of H1N1 was coloured by the experience of SARS, which was not as severe as predicted[150]. Public health planners should, as a result, take into account the potential for a future public health crisis to be viewed through the lens of the-milder-than-anticipated 2009 H1N1 pandemic.

A British study conducted in Autumn 2009-Winter 2010 found that students in both healthcare and non-healthcare focused disciplines demonstrated reasonable knowledge of pandemic influenza (however the authors point out that participation in the study may well have represented a pre-existing interest in the topic).[151]

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[146] Agarwal, "A/H1N1 Vaccine Intentions in College Students: An Application of the Theory of Planned Behaviour."
[147] Seale et al., "Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza."
[148] Van et al., "University Life and Pandemic Influenza: Attitudes and Intended Behaviour of Staff and Students towards Pandemic (H1N1) 2009."
[149] Taha, Matheson, and Anisman, "The 2009 H1N1 Influenza Pandemic: The Role of Threat, Coping, and Media Trust on Vaccination Intentions in Canada."
[150] Taha, Matheson, and Anisman.
[151] Purssell and While, "Knowledge about Pandemic Influenza in Healthcare and Non-Healthcare Students in London."

Although the students demonstrated knowledge of pandemic, this did not necessarily equate to behavioural change and may indicate a gap in understanding (rather than knowledge) as most students (53% on average) indicated they would avoid social events but only a minority (40% on average) would avoid university.[152] A 2009 study of Australian university students found similar results with a high number of students intending to attend university, even if they were displaying symptoms of influenza and in the case of an exam or assignment deadline, this proportion tripled.[153] This division between knowledge and action can also be seen in the results of a study examining student intent to receive the H1N1 vaccine which supports the view that knowledge alone does not necessarily result in behaviour change.[154]

Although many non-pharmaceutical interventions (NPI) were adopted by younger adults during H1N1, not all were embraced with equal vigour. For example, an Australian study found that hand-washing and respiratory hygiene were demonstrated to be more readily accepted and adopted than social distancing measures.[155] There is some evidence to suggest that, in contrast to NPIs, vaccination, younger adults may be more reluctant to vaccinate. In examining student intent to vaccinate during the H1N1 pandemic, Maier, Berkman and Chatkoff found that perceptions of severity of the disease had little effect but perceptions of the risk of illness was linked to intention to vaccinate. Furthermore, perceptions of severity became more relevant to vaccination intent if the described pandemic was viewed as more severe.[156] Studies have also found links between perceptions of susceptibility and vaccination. Ravert, Fu and Zimet determined that perceived susceptibility was not a primary factor but that perceptions of safety and efficacy and prior vaccination were better indicators of intent. In addition, students

[152] Purssell and While.
[153] Van et al., "University Life and Pandemic Influenza: Attitudes and Intended Behaviour of Staff and Students towards Pandemic (H1N1) 2009."
[154] Yang, "Predicting Young Adults' Intentions to Get the H1N1 Vaccine: An Integrated Model."
[155] Seale et al., "Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza."
[156] Maier, Berkman, and Chatkoff, "Novel Virus, Atypical Risk Group: Understanding Young Adults in College as an under-Protected Population during H1N1 2009."

who received the seasonal influenza vaccine were more likely, though not guaranteed, to vaccinate for pandemic influenza.[157]

Reluctance to vaccinate was demonstrated in a 2009 study of university students in Hong Kong. Prior to the vaccine being made available, nearly 58.6% of students indicated intent to vaccinate though only 4.6% actually followed through. Reasons for eschewing the vaccine included concerns over side effects and a perception that vaccination was unnecessary.[158] Safety concerns were also documented in a study of students in New Mexico where 57.5% of respondents believed it was possible to catch influenza from the vaccine.[159] Lack of action on vaccines can be found not only at the individual level but also at an institutional level. An American College Health Association survey found that while the average vaccine uptake was 8%, only 61% of participating educational institutions had acquired stocks of vaccine.[160]

Whilst younger adults do adopt protective behaviours in response to communication, vaccine acceptance remains a challenge due to perceptions that the vaccination is not effective and that pandemic influenza (in this case 2009 H1N1) does not pose a threat.[161] Despite being potentially at risk during an influenza pandemic and, often, exhibiting negative health behaviours such as alcohol and drug usage and poor nutrition, Decker and Slawson found that university students demonstrate a reluctance to get vaccinated. In the autumn of 2009, 70% of students surveyed indicated they would not receive the H1N1 vaccine.[162] The same study found that two-thirds of respondents indicated they had adopted some non-pharmaceutical interventions, in particular hand washing

[157] Ravert, Fu, and Zimet, "Reasons for Low Pandemic H1N1 2009 Vaccine Acceptance within a College Sample."
[158] Rodas et al., "Exploring Predictors Influencing Intended and Actual Acceptability of the A/H1N1 Pandemic Vaccine: A Cohort Study of University Students in Hong Kong."
[159] Wilson and Huttlinger, "Pandemic Flu Knowledge among Dormitory Housed University Students: A Need for Informal Social Support and Social Networking Strategies."
[160] Maier, Berkman, and Chatkoff, "Novel Virus, Atypical Risk Group: Understanding Young Adults in College as an under-Protected Population during H1N1 2009."
[161] Agarwal, "A/H1N1 Vaccine Intentions in College Students: An Application of the Theory of Planned Behaviour."
[162] Decker and Slawson, "An Evaluation of Behavioral Health Compliance and Microbial Risk Factors on Student Populations Within a High-Density Campus."

and the use of hand sanitizers.[163] The discrepancy in uptake between non-pharmaceutical interventions and vaccination is a recurring theme. A study of American college students found that the majority (69%) had adopted NPI in response to H1N1 but only 10% had received the pandemic influenza vaccine and 66% indicated they did not intend to vaccinate.[164]

The relationship between perception and action is described by Katz et al through the lens of the Health Belief Model.[165] If students understand they are at-risk, consider that the severity of the illness is such that action should be taken, and believe that the benefits to taking action outweigh the costs, they can then be influenced by preventive health messaging.[166] Based on the volume of research concluding the links between perceptions and action, it is not sufficient to advise younger adults on the actions they should take without ensuring they have the means to do so; most notably knowledge and comprehension-to understand the 'why'.

Younger adults may be more inclined to possess a sense of invulnerability and therefore not recognise that they may be at-risk in a pandemic. Knowledge of pandemic influenza in younger adults does not necessarily result in greater uptake of protective behaviours. Protective behaviours such as hand washing and respiratory hygiene were more readily accepted than social distancing and vaccination. Research suggests that, whilst younger adults may be receptive to communication around behaviour, it is important not only to indicate what they should do but also provide the rationale.

[163] Decker and Slawson.
[164] Mas et al., "Communicating H1N1 Risk to College Students: A Regional Cross-Sectional Survey Study."
[165] Katz et al., "H1N1 Preventive Health Behaviors in a University Setting."
[166] Katz et al.

2.6 Communication and Pandemic Influenza

Communication is a fundamental part of a successful pandemic influenza response. Prompting lasting behaviour change involves gaining public trust, which in turn involves clearly explaining the situation and the decisions being made, and should employ an all-media campaign.[167] Understanding audience perceptions about influenza is an important part of developing communications to encourage uptake of protective behaviour during an influenza pandemic.[168] Effective communication is also key to engaging the population and gaining their support for the decisions that will be made and policies that will be implemented, particularly potentially controversial topics such as priority access to vaccines and antivirals.[169] It is also important to ensure that the language used is clear and, where necessary, explained. A 2010 study found that university students, while understanding how flu is transmitted were unable to explain what pandemic influenza was and, as a result of the commonly used term 'swine flu', were confused as to what actually was the porcine role in infection.[170]

Pandemic influenza is epidemiologically different than seasonal influenza as there is increased susceptibility in younger populations. Consequently, vaccination strategies and vaccination campaigns need to be adapted to recognize this variance and target a younger population.[171] As was demonstrated in the previous section, younger adult (student) uptake of vaccination during H1N1 was, for a variety of reasons, quite low and this clearly represents an area where improved communication strategies could be useful. Agarwal argues that, because of the influence of past behaviour on behavioural intentions, students can be a difficult group for public health messaging and the use of communications intended to

[167] Barry, "Observations on Past Influenza Pandemics."
[168] Jehn et al., "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic."
[169] Baum, Jacobsen, and Goold, "'Listen to the People': Public Deliberation about Social Distancing Measures in a Pandemic."
[170] Seale et al., "Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza."
[171] Greer, Tuite, and Fisman, "Age, Influenza Pandemics and Disease Dynamics."

resonate with a target group can help promote specific messaging and suggested behaviour.[172]

Communication is not simply about what is said but also how it is said. This can apply to both the nature of the message, for example whether it is fact or emotion driven, but also to the medium. The means through which individuals receive their health information affects the nature of the messaging. For example, an informational leaflet found in a physician's office can contain far more detail than a 280 character tweet. A 2009 study on H1N1 media usage in Arizona not only found local television was a primary news source (70% of respondents) but, perhaps not surprisingly, the disparity between use of the internet as a source between younger adults (18-34) and older (over 65) greatly differed with 24% of younger adults using the internet to locate H1N1 news compared to only 6.6% of older adults.[173] A 2009 Canadian study found that university students were far more likely to rely on the internet as their primary source of information (70%) than any other medium. A mere 3% of students identified health providers or public health agencies as their primary source and less than 3% turned to traditional news media (television, radio and periodicals).[174]

In contrast, an Australian survey conducted in 2007 and 2009 across age groups found a much more diverse pattern of media consumption. Television was the primary source for many (39.2% in 2007 and 56.6% in 2009) while use of the internet was lower at 1.3% in 2007 increasing to 4.5% in 2009. In both 2007 and 2009, respondents overwhelmingly indicated a preference for television as an information source (71.1% and 72.3% respectively).[175] Whether the increased reliance on internet-based information in Canadian students vs the Australian

[172] Agarwal, "A/H1N1 Vaccine Intentions in College Students: An Application of the Theory of Planned Behaviour."
[173] Jehn et al., "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic."
[174] Decker and Slawson, "An Evaluation of Behavioral Health Compliance and Microbial Risk Factors on Student Populations Within a High-Density Campus."
[175] Marshall et al., "Awareness, Anxiety, Compliance: Community Perceptions and Response to the Threat and Reality of an Influenza Pandemic."

public is due to age, nationality or some other feature (such as dormitory living without easy access to traditional media) is not clear. However, it is apparent that public health information providers must ensure not only that their messaging is suitable but, that they utilize the correct medium (or media) to ensure their target population groups receive the message.

The use of clear and easily comprehensible communication is a key element to successful emergency communication but is particularly important in dealing with vulnerable individuals. For example, during Hurricanes Katrina and Rita, affected Veterans Affairs nursing homes had an estimated 50% of residents suffering from some form of cognitive difficulty. Consequently, staff used clear and easily understandable language so that residents were able to understand the situation.[176] Further, a study of older flood victims advised avoidance of bureaucrat-ese in favour of 'ordinary' language.[177]

Determining primary information sources is important not only to ensure that communication messages reach those they are intended for but also to identify how perceptions about the messenger affects behaviour. There have been indications that individuals who considered either their employer or health care provider to be the most influential source of information were more likely to vaccinate against influenza.[178] Communication plans must also address when to communicate. Liao et al suggest that the initial epidemic stage, when uncertainty abounds, provides the most effective opportunity to encourage behavioural change.[179]

A US study examining emotional response, information seeking and vaccination among college students during H1N1 highlights questions around the efficacy of

[176] Claver et al., "Comprehensive Care for Vulnerable Elderly Veterans during Disasters."
[177] Huerta and Horton, "Coping Behaviour of Elderly Flood Victims."
[178] Etingen et al., "Health Information during the H1N1 Influenza Pandemic: Did the Amount Received Influence Infection Prevention Behaviors?"
[179] Liao et al., "Anxiety, Worry and Cognitive Risk Estimate in Relation to Protective Behaviors during the 2009 Influenza A/H1N1 Pandemic in Hong Kong: Ten Cross-Sectional Surveys."

threat appeals and suggests that future public health campaigns should instead be based on providing knowledge with a focus on correcting incorrect assumptions and providing new facts to trigger information seeking and thereby allow the population to become informed without the risk of feeling manipulated.[180] Public-facing communication should empower its audience by providing a sound factual basis on which to assess risk and the adoption of protective behaviours; including vaccination.[181] Understanding the information needs and information seeking behaviour of both the population at large and individual population groups will enable communication agencies, be it international, national or local government, charities, hospitals, public health and public service agencies or other interested actors, to better prepare for a pandemic and to ensure communication during a pandemic meets the needs of the public. These agencies, in turn, must cooperate to ensure that the public is given accurate, consistent, timely and actionable information but not overloaded or, to the extent possible, provided with contradictory information.[182]

The development of communication and behavioural messaging should take into account the target audience and reduce the potential for confusion in how messages are interpreted. Broad messages such as 'avoid contact with sick people' can be understood in different ways and do not necessarily provide clear direction for how this should be accomplished, potentially leading the audience to misinterpret the best course of action.[183] In New Zealand during the H1N1 pandemic, the Ministry of Health focused on reinforcing public health messaging with clear, concise advice, in particular 'stay at home if you have symptoms, wash your hands regularly and cover your cough (with some health education material explicitly advising 'covering your cough with a tissue' or coughing 'into your upper

[180] Wang and Ahern, "Acting on Surprise: Emotional Response, Multiple-Channel Information Seeking and Vaccination in the H1N1 Flu Epidemic."
[181] Mowbray et al., "Communicating to Increase Public Uptake of Pandemic Flu Vaccination in the UK: Which Messages Work?"; Majid and Rahmat, "Information Needs and Seeking Behavior During the H1N1 Virus Outbreak."
[182] Majid and Rahmat, "Information Needs and Seeking Behavior During the H1N1 Virus Outbreak."
[183] Kiviniemi et al., "Perceptions of and Willingness to Engage in Public Health Precautions to Prevent 2009 H1N1 Influenza Transmission."

sleeve')'.[184] Recommendations should also be practicable. For example, encouraging individuals to cough and sneeze into a tissue requires them to have not only ready to access to a tissue but also nearby rubbish bins in which to dispose of them.[185]

This attention to fact-based, information-driven messaging has been recommended by the WHO and the EU who suggest that messages about behavioural change, such as vaccine uptake, how to care for the sick and proper respiratory and hand hygiene, be provided to the public during a pandemic.[186] This is supported by a Dutch study, published in 2010, which found that the messaging respondents most wished to have as quickly as possible in the event of a pandemic was information that would assist them to assess risk and protective measures, recognise an infection, understand infection transmission and infection treatment.[187] This study also looked at trust and found that 40% of respondents assumed the media and government would exaggerate a pandemic threat, but more than 70% still considered the government trustworthy - though patient organizations were ranked at 85%.[188] An American study found similar patterns with 73% of participants considering public health officials to be credible while medical professionals (91%), local media (88%) and national media (85%) were all ranked higher.[189]

Trust is important in communication to ensure the public are not only receiving but are receptive to public health information such as adopting encouraged protective behaviours in order to improve overall health outcomes. An Italian study found that individuals with trust in the media and government were more likely to adopt recommended protective behaviours, even if they felt the media were overhyping

[184] Barry et al., "Respiratory Hygiene Practices by the Public during the 2009 Influenza Pandemic: An Observational Study."
[185] Morrison and Yardley, "What Infection Control Measures Will People Carry out to Reduce Transmission of Pandemic Influenza? A Focus Group Study."
[186] Crosier, McVey, and French, "By Failing to Prepare You Are Preparing to Fail': Lessons from the 2009 H1N1 'swine Flu' Pandemic."
[187] Kok et al., "Behavioural Intentions in Response to an Influenza Pandemic."
[188] Kok et al.
[189] Jehn et al., "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic."

the threat and the government was performing poorly.[190] Discouraging misinformation campaigns and sources is also important. As Taha, Matheson and Anisman write, 'disreputable information can be obtained from an array of websites' and individuals will assess a course of action based on the trust they have of the source of information.[191]

While it is not advisable to attempt to scare the public into action, in communicating with the public it is necessary to find a balance between providing reassurance while not assuaging concerns to the extent that the public's perception of risk is inaccurate. Following the 2009 H1N1 pandemic, research demonstrated that the public appeared to have assumed the danger was overstated and that government communication did little to change their perspective.[192] A Norwegian study found that a measure of fear or concern could motivate individuals to adopt protective behaviours.[193] Contrasting with this is the need to avoid creating unnecessary fear. While a measure of concern paired with informed risk analysis can result in positive behaviour changes, excessive fear -especially if accompanied by poor messaging - can have negative effects on behavioural change. In the latter case, individuals are more likely to engage in avoidance behaviours that carry socio-economic costs and the use of fear as a motivator can damage trust in the authorities delivering the message. Additionally, while using concerns around security can be effective in the short term by causing emotional concern, it risks causing longer-term psychological issues among the population.[194]

Communication agencies involved in public health messaging (either directly like government or indirectly like the media) should be cautious to avoid 'disease

[190] Siegrist and Zingg, "The Role of Public Trust During Pandemics Implications for Crisis Communication."
[191] Taha, Matheson, and Anisman, "The 2009 H1N1 Influenza Pandemic: The Role of Threat, Coping, and Media Trust on Vaccination Intentions in Canada."
[192] Rubin et al., "Who Is Sceptical about Emerging Public Health Threats? Results from 39 National Surveys in the United Kingdom."
[193] Lau et al., "Prevalence of Preventive Behaviours and Associated Factors during the Early Phase of the H1N1 Influenza Epidemic."
[194] Rousseau et al., "Public Media Communications about H1N1, Risk Perceptions and Immunization Behaviours: A Quebec-France Comparison."

fatigue'. Comparatively low adoption of protective behaviour in Hong Kong is thought to be linked to repeated high-alert infectious crises, notably SARS (2003) and cases of H5N1 (starting in 2004). Past situations viewed to be false alarms and the normalizing of epidemic threats can negatively affect preventive behaviour uptake as individuals may view a present threat as either overhyped or simply business as usual.[195] Indeed, as H1N1 progressed through the year, the view that it had been overestimated by the media and government increased as did agreement with the sentiment 'we just have to accept it'.[196]

A 2013 study examining the response to H1N1 in three European countries (UK, Hungary and Italy) found that due to a sense of emergency in managing the pandemic, none of the countries used audience research in formulating their messaging; nor did respondents view this as problematic since the preventive behaviour messaging was relevant to all segments of society.[197] Of note, in England, public health messaging is encouraged to avoid a 'one size fits all' strategy in favour of targeted communication.[198] This targeted approach is supported by the field of behaviour change, which has found that generic messaging advocating behaviour change is far less effective than tailored communications, as the latter are better able to address the specific needs and motivations of its audience. An added complication in Italy was the politicization of pandemic management by the government that, in turn, encouraged media to treat the pandemic as they would any other issue and to push back on government advice and recommendations.[199]

A discussion of effective communication must include mention of the role of the media. In 1918, close ties between the government and media resulted in an

[195] Keller et al., "Intention to Engage in Preventive Behaviors in Response to the A/H1N1 Pandemic Among University Entrants in Four Chinese Cities."
[196] Bults et al., "Perceived Risk, Anxiety, and Behavioural Responses of the General Public during the Early Phase of the Influenza A (H1N1) Pandemic in the Netherlands: Results of Three Consecutive Online Surveys."
[197] Crosier, McVey, and French, "By Failing to Prepare You Are Preparing to Fail': Lessons from the 2009 H1N1 'swine Flu' Pandemic."
[198] Crosier, McVey, and French.
[199] Crosier, McVey, and French.

agreement to limit coverage of the crisis as well as of the severity. In contrast, during the 2009 H1N1 pandemic, the World Health Organization provided weekly statements, national governments viewed communication as a key tenet of their response and media were active in shaping opinion with 2,374 articles in the UK alone during the period of March 2009 to February 2010.[200]

Effective communication with the public during an influenza pandemic is key. Through communication the public can be informed, not only of the circumstances and severity of the illness but also what steps they can take to protect themselves. Ensuring that the message delivered to the public is appropriate and informative requires consideration of multiple variables including content, tone, and, medium.

2.7 Limitations of the existing literature

Public response to a pandemic influenza, as regards to behavioural intentions and communication, has been widely researched. This research has encompassed a variety of facets of population and behavioural considerations. This research has not been limited to a high-level general population approach as specific age-based sub-population groups have also been studied. However, where a specific population group has been researched, this research is usually quite focused and limited to that particular population group.

In examining behavioural intentions during a pandemic, studies have considered a wide variety of potential behaviours including non-pharmaceutical interventions (NPI) as well pharmaceutical options such as vaccination and anti-virals. Although several studies have considered protective behaviours as a suite, several studies have focused on one aspect of behaviour which allows for a more in-depth examination of the subject at hand, however does not permit a comparison across behaviours to see how intentions to adopt protective behaviours may vary, depending on what is being recommended.

[200] Jivraj and Butler, "The 1918-19 Influenza Pandemic Revisited."

Finally, although the international nature of the literature provides a richer perspective on behavioural intentions and communication needs during a pandemic, it does not necessarily have cross-border applicability as linguistic, cultural, socio-economic, political, and geographical variables are likely to differ from country to country and so results from an international study may not be applicable to the United Kingdom. Whilst the UK and Australia, for example, share many similarities, Australia's geographic location in the Southern Hemisphere means that its flu season tends to run opposite that of the UK.

This thesis will further the existing literature in three ways. Firstly, comparing two potentially at-risk population groups will allow for a greater understanding, not only of the risk perception, behavioural intentions, and communication needs of those groups, but also of how at-risk population groups may differ. As well, examining a variety of protective behaviours, including NPIs and vaccination, will allow for a greater comparison of factors which may promote or inhibit behavioural uptake and how these differ across recommended behaviours. Finally, this research will present a UK perspective of these potentially at-risk groups.

2.8 Chapter Summary

This chapter examined the existing research literature around at-risk populations and pandemic influenza. The public is broadly supportive of illness prevention methods during an influenza pandemic, in particular the adoption of protective, or recommended, behaviours. These behavioural intentions however are influenced by a number of factors including perceptions of risk and severity, behavioural efficacy, and self-efficacy. Knowledge of pandemic influenza would appear to vary somewhat between different population groups (in this case, older and younger adults). Behavioural intentions also seems to vary between population groups. Although hand and respiratory hygiene measures are generally supported, there is some evidence that older adults are less inclined to seek medical assistance when ill whilst younger adults are less inclined to support social distancing and vaccination behaviours. The literature suggests that, to be effective, communication should

inform the public by providing necessary information while being careful not to create an information overload or 'disease fatigue'. As well, communication should provide the public, and at-risk groups, with clear, actionable direction to support the adoption of protective behaviours Communication interventions are needed to promote the uptake of protective behaviour in at-risk groups. The development of an evidence-based intervention for older adults will be a focus of this thesis.

The next chapter will examine current pandemic preparedness planning and challenges.

3 Chapter III-Review of Practice

3.1 Chapter Overview

Chapter 1 introduced the context of this thesis while chapter 2 contained a review of the literature relating to risk perceptions, behavioural responses, and communication vis-à-vis pandemic influenza. This chapter will examine existing pandemic preparedness planning at a national, local and institutional level. This analysis was based on interviews with officials responsible for emergency planning and a review of pandemic preparedness planning guidance documents. Results of this review were then analysed in relation to organisational preparedness and planning challenges, perceived population characteristics and needs during a pandemic, and perceptions of risk and vulnerability in the face of an influenza pandemic.

3.2 Introduction and Methods

This review was conducted in order to better understand existing practice in pandemic preparedness; particularly as it relates to issues of at-risk or vulnerable populations, and communication. To conduct the review, two separate, but complimentary, data sources were included: interviews with practitioners and grey literature. This allowed for the inclusion of a greater variety of sources as well as a more targeted approach to determining specific population challenges in planning for a future pandemic.

Interviews with practitioners were conducted with individuals responsible for UK national and local emergency planning as well as with individuals responsible for managing facilities or services that cater to older adults (ie: adult social services) and younger adults (ie: universities). These two groups were selected as the focus of the research as they represent two opposite risk profiles during a pandemic where older adults may be less at-risk and younger adults more at-risk as compared to seasonal influenza. Although not all younger adults are university students, for the purposes of this research, younger adults were operationalized as university

students, and so university emergency planners were interviewed to gain an understanding of the planning challenges around this population group. Recruitment relied heavily on online sources, both to locate potential practitioners and to contact them. The majority of practitioners contacted (as well as those interviewed) were located through google searches of London universities, older adult residential or activity service providers, and London boroughs. Whilst contact information could usually be found, more often than not it was either a general email/number or contact form and, frequently, did not receive a reply. Where more specific contact information was available (ie: email for the borough emergency planning department rather than council-wide contact form), responses were more forthcoming and resulted in a higher number of positive responses. Certain practitioner groups were much more inclined to engage with the research as both London borough emergency planners and university practitioners had relatively high rates of response. In contrast, older adult service providers were very difficult to reach and those contacted were less willing to participate in the research. Although most of the participants were recruited in this manner, a few interviewees were accessed via gatekeepers such as previous interviewees or practitioners associated with this research.

A total of 13 individuals responsible for emergency planning across 11 London universities were interviewed (interviewees coded as PRYA). The research also included interviews with three individuals responsible for adult services, seven individuals responsible for London-level emergency planning, and two individuals responsible for UK national pandemic preparedness (interviewees coded as PROA) (See Appendix A) Although the London and national-level emergency planners have responsibility for more than just older adults in terms of pandemic preparedness, these practitioners were able to clarify the way in which vulnerable populations are taken into account in overall emergency planning and the challenges that can ensue. As well, practitioners discussed their expectations of population needs, communication plans, and engagement with the population groups in question (See Appendix B). These interviews were conducted in person and were recorded for transcription.

To supplement these interviews, a review of official pandemic planning guidance was conducted. The review included guidance from the UK, London (and boroughs where available), the European Union (EU), the World Health Organization (WHO), Australia, Canada, New Zealand and the United States. Although the focus was on UK and London-area planning as they are the most relevant to this research, the WHO was included as it is the pre-eminent global health authority. Whilst the UK, at time of writing, is scheduled to leave the EU, geographic proximity and historical interrelatedness of governance and services would suggest that EU guidance is likely to influence, if not directly affect, UK pandemic planning. Australia, Canada, New Zealand and the United States provide a relevant point of comparison as these countries share a similar socio-economic, linguistic and politico-legal profile to the United Kingdom and, in the case of the three former dominions, also share a similar health care system (universal health care).[201] The UK national pandemic plan was included as were London borough planning guidance documents as/where available. This resulted in a total of 27 pandemic planning guidance documents reviewed.

The data collected from the practitioner interviews and grey literature review was then coded using NVivo. The coding framework broke down the data across three main themes with several sub-themes in each: planning considerations and challenges (including institutional responsibilities and assumptions around population needs), perceptions of risk and vulnerability, and communicating with the public. This helped to identify a clearer understanding of the current state of pandemic planning in order to understand the practical realities as well as to set up a comparison with how the public, and in particular at-risk populations, view this issue, which is the subject of subsequent chapters.

[201] Roy, "Conservative Think Tank: 10 Countries With Universal Health Care Have Freer Economies Than The U.S."

3.3 Pandemic Planning and Preparedness

This section will examine considerations around pandemic planning and preparedness from a governmental, or organizational level. This will include how pandemic planning incorporates different levels of government or jurisdictions, as well as the role of stakeholders in planning. Additionally, the responsibilities and population requirements of different organizations can affect pandemic preparedness. Finally, this section will address practical challenges for pandemic planning identified by practitioners.

3.3.1 Pandemic Planning and Preparedness as a Collaborative Endeavour

Although multiple pandemic plans are prepared at varying levels of government and in various institutions, both pandemic planning documents and practitioners demonstrate that pandemic preparedness is a collaborative effort. Supranational organizations, such as the World Health Organization or European Union, offer guidance and, where appropriate, coordination.[202] National pandemic planning, in turn, can be affected by secondary levels of government. In the UK, for instance, priority groups for vaccination are decided jointly by Ministers of the four countries.[203] Equally, in Canada, although the provision of health care is a provincial or territorial responsibility, the federal government is responsible for coordinating in a pandemic.[204] National pandemic planning in the UK also feeds into local plans. Public Health England (PHE) was consistently listed as the primary source in preparing for or responding to a pandemic. Local government planning, in turn, will not only involve local agencies but also require cooperation from local organizations.[205]

> So I guess it would depend on what was communicated by, say, Public Health, for example, so we are a public space and if it was a case that we were told you need to make sure that your members are doing this and this to avoid any contamination or anything like that, then obviously we would meet that need as it was communicated to us. (PROA-01)

[202] WHO and EU planning documents
[203] Department of Health, "UK Influenza Pandemic Preparedness Strategy 2011." , 55
[204] Pan-Canadian Public Health Network, "Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector.", 48
[205] Lambeth and Southwark Public Health, "Pandemic Flu Coordination Plan Lambeth & Southwark.", 18

> We wouldn't do anything in-house unless we were specifically asked to; we would look to Public Health England in the first instance in the early stages and the NHS once it goes into the treatment phase. (PROA-04)

Stakeholder, or public, engagement is also a key element in pandemic preparedness. The WHO recommends that states gather feedback from the public on their willingness or ability to adopt recommended behaviours in order to influence communication materials.[206] This approach is reinforced by the Canadian pandemic plan which argues that risk perception is key to encouraging the adoption of protective behaviour and urges government to monitor public perception and engage with stakeholders to improve pandemic response.[207] In practice, the inclusion or, at least, consideration of stakeholders in pandemic planning appears to a consistent factor at both a London government and organizational level.

> So in London we have a voluntary sector panel as a sub group of the LRF and they have Age UK, they have Red Cross, St. John, all of the obvious ones as well as some of the more random London-specific groups that exist just because of London ethnicities. (PROA-12)

> Keeping their [university student] stakeholders informed, so if it's something sufficiently serious that there's national activity, I would expect parents to be on the phone and so it's not overlooking the fact that students themselves may well be quite relaxed about something, but actually other stakeholders may well not be. And within that I would include internal university stakeholders…. …But the ability to be able to keep others, who are other internal and external stakeholders, involved is quite important. (PRYA-01)

3.3.2 Institutional Considerations

Institutional roles and responsibilities affected pandemic preparedness as the extent of pandemic planning varied across categories of interviewees. Government bodies demonstrated greater responsibility to prepare for a pandemic whilst some service providers, such as activity centres, had a health and safety plan but had not necessarily given consideration to specific risks such as pandemic.

> Yeah, we do a combination of both, so in terms of statutory obligations the law is a little bit… you can interpret it in different ways but it just says that as a category one responder the council has to make emergency plans or has plans in place but it doesn't specifically say what those plans consist of, whether or not it's just a generic plan. So there is a generic plan that we have which outlines the general

[206] World Health Organization, "Pandemic Influenza Preparedness and Response WHO Guidance Document.", 40

[207] Pan-Canadian Public Health Network, "Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector.", 47

> framework of how the council manages incidents but then we do have these specific plans for pandemic flu, flooding and so on. (PROA-06)

> We also have a health and safety plan that covers all our members from children to the general population to the older population, so if the fire alarm goes off it affects everyone, everyone has to evacuate in the same way, everyone goes to the same meeting point, so there's all those type of fire evacuation, fire alarms, anything like that. (PROA-01)

Within London, factors such as population density, socio-economics and cultural diversity can vary amongst boroughs and affect the planning and preparedness requirements.

> I'm not entirely familiar with every demographic of boroughs in London, but we certainly do have an older population and we also have very good schools in the borough, so we do have a high school population. So in terms of those vulnerable groups of people there's definitely gonna be an emphasis on touching base with them. In London boroughs that are more kind of commercial in a sense and have a transient population they will have a different need of communication if you like or a different avenue to get it out there, get out the message to their population, but we're quite suburban in that sense. (PROA-05)

> And I think in terms of transmission, then it's a lot of things, because [London borough] is one of the most densely populated boroughs, right? And there's the austerity in certain group of populace, mainly those with less resources where crowding has increased so this is all very good for transmission of infectious agents. (PROA-08)

One interviewee also highlighted that the ebb and flow of people in London, including tourists, commuters and a transient population, creates a need to consider how to diversify official communication to reach these varied populations.

> And then thirdly the status of London in a way, so you've got lots of people coming in, coming out, it's a busy place for tourists, for commuters, so how can we work with those individuals, so they're informed? They might not be London residents so we can't post them a letter, but how can we still make sure they get information that's relevant to them? And you don't necessarily get the same transient population in other cities. (PROA-10)

Population characteristics were also seen to affect university pandemic planning and preparedness with factors such as international students, halls of residence, and average age of students being referenced as influencing characteristics.

> We have a significant number of foreign students on the campus, so these are students who have no home location in the United Kingdom, so any emergency that closed part of the campus, for instance, major emergency that closed part of the campus, whereas UK residents could go home, those students we would have to find alternative accommodation… (PRYA-09)

> I mean we have a slightly different sort of cohort of students here generally, they are generally more mature, I think our average age is about 23, 25, so we do generally have much more mature students, a lot of them commute in from home, quite a number of them have their own families in the sense that they have their own children, or they have their own homes, so they have different kind of responsibilities. (PRYA-11)

3.3.3 Pandemic Preparedness Challenges

Interviewees identified several challenges in pandemic preparedness and planning. One recurring theme was the challenge around the uncertainty of a pandemic and the difficulty this can create in effectively planning. To develop a plan, assumptions must be made but the nature of a pandemic is that its impact cannot be fully known until it has arrived.[208]

> So pandemic planning is brilliant and terrible in equal measure. It's really hard to get people engaged because you have no idea when it's gonna happen, you have no idea how bad it's gonna be, when it's gonna start, all of these uncertainties. (PROA-12)

Another challenge referenced was the identification of vulnerable individuals, specifically needing to identify individuals not currently known to the authorities whilst an emergency is unfolding.[209]

> And the same with flu pandemic, adult social care will know adults, children, the children's services will know the children obviously that are in receipt of a service, that general public that's out there would be through a GP and the GP would then know who's on their books from the local area. Now, if they're in receipt of benefits, yes, we will know that, but you've still got this whole group of people, working families, that at some point could have a need or vulnerability and they are not on our books. (PROA-03)

> I suppose it's the same with getting information out to any vulnerable people, it's who they're in touch with. I Chair the Borough Resilience Forum and I sit on the Health Protection Forum, so we're kind of well linked in terms of who does what and who knows who, but in any emergency trying to get information about vulnerable people is quite difficult, contrary to what people believe. I know they have some lists but they're always a little bit reluctant to release them. (PROA-07)

An influenza pandemic could, potentially, result in a reduction of services either due to health and safety considerations or to a lack of staff resources.

> So within that business continuity plan is a structure in terms of if they've not got enough staff resources, for example, for something like flu, we would then stop

[208] Beveridge and Sellwood, "Pandemic Influenza Framework.", 8
[209] Emergency Planning and Business Continuity Team, "London Borough of Bexley: Major Emergency Plan.", 6

> non-critical services, which we don't have many left anymore, we used to have day centres, they've all closed. (PROA-03)

> So we have closed early before so it's not out of the realms of possibility that if there was some type of pandemic or something like that and there was a health risk or an outbreak, that we would consider closing early or changing hours for a while or something like that. (PROA-01)

The potential loss of staff due to morbidity or mortality would not only affect business continuity and regular service provision but also potentially limit the ability of an organization to respond to the pandemic.

> We might have eight Comms Officers normally but in the middle of a pandemic we might have half of them off with it or looking after ill relatives, so I suppose there has to be a little bit of realism about the degree to which we can finesse the messages to different groups but I'm pretty sure that the people would want that to be the case. (PROA-06) (in context of capacity to communicate during an influenza pandemic)

> Loss of key personnel will always be problematic and making sure that we have a system in place for somebody to take decisions. … …If push comes to shove, we shut it down but, of course, your next step is who's ensuring it's shut down, who's managing that. (PRYA-05)

Although measures are in place for local resource sharing and assistance in an emergency, emergency planners felt that, the broad nature of a pandemic would mean that all boroughs would likely be affected and resource sharing would be unlikely to occur.

> I have to say, it won't because a flu pandemic, it's not geographically confined, so [London borough] can't just call on [alternative London borough]'s staff because they'd have a plethora 'cause [London borough]'s all down with the flu. No unfortunately I think in a pandemic I think it would be very unlikely. (PROA-09)

> No, I think we… we're a London borough, we're part of the London arrangements. I suppose the challenge for boroughs such as [London borough] within London is that we're small, we're on the outskirts and we mustn't forget that our populations blend into [adjacent county]… …And even London, as an outer London borough, you know resourcing often with London problems can be focussed on if something is within inner London because of the challenges there, then resources can be directed there. (PROA-04)

3.4 Defining Risk and Vulnerability

This section will consider the lexicon of 'risk' and 'vulnerability' in pandemic planning. These terms are used throughout official guidance on pandemic planning however, whilst similar, use, or definition of these terms is not consistent either

internationally or nationally. In the pandemic planning guidance documents reviewed, it is clear that risk has a much broader usage. The use of the term isn't restricted to the concept of an individual or group being at-risk of pandemic influenza related morbidity and mortality but is also used with regards to systemic or business continuity challenges including risk management[210], risk assessment[211] and risk communication[212]. When referenced in relation to populations or individuals however, risk, or at-risk, tends to be used to specify increased threat of morbidity or mortality in relation to pandemic influenza.[213] Where specific at-risk population groups are listed, they tend to conform to seasonal flu guidelines for risk.[214] At both a national and local level pandemic plans tend to identify older adults, young children, pregnant women, and individuals with pre-existing or chronic medical conditions as at-risk groups.[215] Although at-risk groups listed tend to be consistent, there is often recognition of the potential for variance in at-risk groups, particularly with regards to age ranges. This can be seen, for example, in both the London Resilience planning document and the UK pandemic preparedness strategy which recognize pre-existing medical conditions, pregnancy and childhood as risk factors but also identify otherwise healthy young adults as being potentially at risk depending on the pandemic.[216] Similarly, Haringey's planning document acknowledges there may be 'age-specific differences in the clinical attack rate' however as this is not possible to predict, the planning will assume a uniformity in attack rate for all ages.[217] Of the planning documents reviewed, this recognition of age-related variability in risk is most strongly communicated in the guidance for Tower Hamlets' which states that, unlike seasonal influenza, pandemic strains are

[210] Public Health Agency of Canada, "Lessons Learned Review: Public Health Agency of Canada and Health Canada Response to the 2009 H1N1 Pandemic.", 26
[211] Australian Department of Health, "Australian Health Management Plan for Pandemic Influenza.", 41
[212] US Homeland Security, "National Strategy for Pandemic Influenza: Implementation Plan.", 8
[213] Beveridge and Sellwood, "Pandemic Influenza Framework.", 20
[214] NHS, "Who Should Have the Flu Vaccine?"
[215] Greenwich Clinical Commissioning Group, "Greenwich CCG Pandemic Flu Plan.", 5 and US Homeland Security, "National Strategy for Pandemic Influenza: Implementation Plan.", 25
[216] Beveridge and Sellwood, "Pandemic Influenza Framework.", 7 and UK Department of Health Pandemic Influenza Preparedness Team, "UK Influenza Pandemic Preparedness Strategy.", 16
[217] Haringey Resilience Forum, "Multi-Agency Pandemic Influenza Plan.",9

more likely to attack healthy young adults and may create the highest risk in non-traditionally affected groups.

The identification of vulnerable populations in the UK would appear to be influenced by Cabinet Office guidance for 'Identifying People Who Are Vulnerable in a Crisis' which defines vulnerable individuals as those who 'are less able to help themselves in the circumstances of an emergency'[218]. The guidance also identifies thirteen categories of potentially vulnerable people. The list includes many of the expected groups such as older adults, mobility impaired individuals and pregnant women but also includes tourists, travellers and minority language speakers[219]. The Lambeth and Southwark Pandemic Flu Coordination Plan refers to the Cabinet Office guidance and repeats the definition of vulnerability listed above.[220] Additionally, for planning purposes such as vaccine priority, Lambeth and Southwark distinguish between vulnerability and clinically at-risk.[221]

This distinction was supported by several practitioners who expressed vulnerability as an issue of capability rather than susceptibility.

> That's a very good question. I'd kind of classify it [Vulnerability] as it's dependency, so it's whether they are independent or whether they need support getting through their normal daily life if you like. (PROA-05)

> That's a good one [are risk and vulnerability the same?], I think it's more about capability to deal with rather than just being exposed to a danger. If we had young, fit people that are at risk we wouldn't necessarily consider them vulnerable, because they're more capable of looking after themselves, they're more likely to have family and friend networks that could provide the support to them but I think that's probably where we would make the distinction. (PROA-06)

The concept of vulnerability is not always limited to specific groups and can be used to refer to the national or state level such as in the 'Australian Health Management Plan for Pandemic Influenza' which refers to the vulnerability of 'our' population[222],

[218] UK Civil Contingencies Secretariat, "Identifying People Who Are Vulnerable in a Crisis.", 4
[219] UK Civil Contingencies Secretariat., pg. 14
[220] Lambeth and Southwark Public Health, "Pandemic Flu Coordination Plan Lambeth & Southwark.", 24
[221] Lambeth and Southwark Public Health., 23
[222] Australian Department of Health, "Australian Health Management Plan for Pandemic Influenza.", 19

or in the EU-EEA guidance, which states that, despite an impressive array of countermeasures, Europe 'has never been more vulnerable to a pandemic'; a judgement based on specific factors (growing populations of older adults and individuals with chronic disease) but applied to the whole.[223] Harrow uses a similar though not identical list and is more detailed in its classification of vulnerable, for instance, excluded older people or disadvantaged people who move frequently.[224]

The situational nature of vulnerability creates the potential for greater disparity in national experiences of, and associated planning for a pandemic as national circumstances will not be homogeneous across countries. Variances in geography, infrastructure, and socio-economics, for example, will affect a country's experience of, and ability to deal with a pandemic. The Australian guidance recognizes that 'vulnerability is unique' and argues that the pandemic experience overseas can only be indicative as the conditions observed abroad may not be relevant in Australia.[225] An example of the uniqueness of vulnerability can also be seen in the Canadian pandemic guidance, which includes specific reference to 'remote and isolated communities'. With a population density of 4 people per sq km of land, geography presents a challenge to Canadian planners and creates vulnerability that is less likely to be seen in the UK (population density 269 people per sq km).[226]

New Zealand's pandemic planning guidance introduces an additional term or concept into the lexicon. Susceptibility is used primarily as a synonym for risk, or more accurately, at-risk. Whilst risk is used in the New Zealand planning guidance primarily to denote structural or systemic risks and, to a lesser extent populations under threat, susceptibility is used exclusively to indicate personal or population risk and denotes inherent characteristics that increase predisposition to higher

[223] European Centre for Disease Prevention and Control, "Pandemic Influenza Preparedness in the EU/EEA-Status Report as of Autumn 2007.", 3
[224] Harrow Primary Care Trust, "Harrow PCT Influenza Pandemic Plan.", 10
[225] Australian Department of Health, "Australian Health Management Plan for Pandemic Influenza.",19
[226] The World Bank, "Population Density (People per Sq. Km of Land Area)."

morbidity or mortality. This distinction can be clearly seen in the section on vulnerable and susceptible people which states that:

> 'Māori and Pacific people, pregnant women and morbidly obese people were more susceptible, and therefore harder hit, than other groups in the first wave of the influenza A (H1N1) 2009 pandemic. People living in institutions such as rest homes or barracks, and schoolchildren, are at higher risk of infection than other groups because they are living or working closely to each other.'[227]

Although risk and vulnerability tend to be defined separately, they are often used jointly. The 'Australian Health Management Plan for Pandemic Influenza' classes vulnerable populations amongst at-risk groups.[228] The inclusion of vulnerable populations within risk is also seen in the Canadian guidance, which refers to vulnerable populations as part of high-risk groups.[229] In the UK guidance however, this relationship between risk and vulnerability is reversed as at-risk groups are considered to be more vulnerable. [230]

Whilst concepts of risk and vulnerability do tend to be separated in pandemic planning guidance, they are not always clearly delineated. Although the Australian pandemic plan separates risk and vulnerability, it also points out that, because a pandemic will be caused by a novel virus, it is possible that some population groups, such as older adults, may have immunity while the general population is vulnerable.[231] In this instance vulnerability is used to denote susceptibility to the virus. Tower Hamlets pandemic planning document also initially distinguishes between risk and vulnerability as, while risk is discussed in the context of morbidity and mortality, vulnerability is referenced in the context that vulnerable populations

[227] New Zealand Ministry of Health, "New Zealand Influenza Pandemic Plan: A Framework for Action.", 20
[228] Australian Department of Health, "Australian Health Management Plan for Pandemic Influenza.", 48
[229] Public Health Agency of Canada, "Lessons Learned Review: Public Health Agency of Canada and Health Canada Response to the 2009 H1N1 Pandemic.", 43
[230] UK Department of Health Pandemic Influenza Preparedness Team, "UK Influenza Pandemic Preparedness Strategy." 52
[231] Australian Department of Health, "Australian Health Management Plan for Pandemic Influenza.", 19

'may be less able to help themselves'[232] but then later refers to the borough having a more vulnerable population if the pandemic targets younger individuals.[233]

The lack of consistent definition and use of risk and vulnerability in pandemic planning was also considered by emergency planners. When asked how they would define risk and vulnerability, practitioner responses were generally consistent, expressing the view that they felt these were two different concepts which broke down along the lines of hazard and impact.

> Yeah. I think the risk is the risk that you are exposed to an infectious agent. The vulnerability, for me, is more the consequences of the exposure and how people are much more likely to be affected than others, so I think they are two different dimensions I think, two different aspects, no? (PROA-08)

> OK, so the way that we do it in practice is that we have… there's a kind of overlap but we kind of look at risk first in the sense of, OK, let's understand hazard, so what are the things that might occur? … … Impact you're starting to get into vulnerability because how much impact depends on the population that's affected and impact is differential based on vulnerability. (PROA-11)

Having a clear and consistent definition of 'risk' and 'vulnerable' across pandemic planning was considered to be useful though some concerns were raised over the feasibility of such definitions.

> It would be helpful to define 'at-risk' vs 'vulnerable' because I think it's a confusing line to draw, so you wouldn't put… If a 40-year-old, for example, has mental health problems, then the vulnerability is quite high but the risk of a flu pandemic you would categorize as quite low, even though it's not, because you're concentrating your resources on those older generations. And I think we miss a trick there because even children with vulnerabilities are at risk of flu and then they would pass onto the parents who are then… So I think it would be useful to try and define it a bit clearer in terms of flu pandemic. (PROA-03)

> But from a communication's perspective I think it would be incredibly helpful if we could set it out but the challenge then reflects back to that second point about how it's incredibly difficult to work out who is at risk and who is vulnerable. One of the challenges we've seen is that people's vulnerability changes; in a pan flu perspective you could have someone who is living at home and has a carer for them, they're not vulnerable, they've got that carer but should that carer become sick then instantly that person is then vulnerable. But they may be totally unknown to the wider society because they don't need to be known because they've got a carer who looks after them all the time, so that person is at risk but they're not vulnerable, they're at risk if their carer gets sick but they're currently fine. And

[232] London Borough of Tower Hamlets, "Multi Agency Pandemic Influenza Plan.", 16
[233] London Borough of Tower Hamlets., 16

> that's a big challenge and we have no register of those people, we have no need to have a register of those people. (PROA-12)

3.5 Communication

Communication plays a crucial role in shaping public response[234] and ensuring tailored communication to vulnerable populations is a repeating theme across pandemic planning and preparedness guidance.[235] Effective communication can 'influence attitudes, minimise misconceptions, encourage positive behaviours'[236] and it provides the means to raise awareness and to empower the public to act in ways that will promote health.[237] Although this research draws on pandemic planning guidance documents, this section will focus on information needs within a London context.

3.5.1 Communication Content

The role of communications is broadly defined as providing advice to the public to enable them to protect themselves and others by adopting protective behaviours[238]. As such, advice on content across pandemic planning and guidance emphasises the provision of basic medical information and practical advice such as the 'Catch it, bin it, kill it' message around respiratory hygiene as a primary focus.[239] This was echoed by several interviewees.

> Well, we did a whole lot about prevention and infection control and hand hygiene etc. etc. all of that stuff so actually that was a really, really big part of it. (PROA-11)

> So there will be whole levels of messaging, not just, 'Actually this is for your…' the health related messaging about here's what you do and here's what treatment you might want to consider getting, here's when you stay at home, but they'll be wider messaging that we need to do as government to say, this is what a pandemic is, this is what as central government we're doing about it and working out what those points are to tell people that this is ramping up now and you need to be a

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[234] Public Health Agency of Canada, "Lessons Learned Review: Public Health Agency of Canada and Health Canada Response to the 2009 H1N1 Pandemic.", 48

[235] Public Health Agency of Canada., 48; Australian Department of Health, "Australian Health Management Plan for Pandemic Influenza.", 64,; Greenwich Clinical Commissioning Group, "Greenwich CCG Pandemic Flu Plan.", 18; Beveridge and Sellwood, "Pandemic Influenza Framework.", 23 and World Health Organization, "Pandemic Influenza Preparedness and Response WHO Guidance Document.", 40

[236] Australian Department of Health, "Australian Health Management Plan for Pandemic Influenza.", 59

[237] Australian Department of Health., 10

[238] UK Department of Health, "UK Pandemic Influenza Communications Strategy 2012.", 8

[239] UK Department of Health, "'Catch It. Bin It. Kill It.' Campaign to Help Reduce Flu Infections."

> little bit more concerned, without creating full out panic and people stockpiling food as though it's the end of the world! (PROA-13)

Additionally, emergency planners indicated that communications with the public would need to be as clear and concise as possible in order to ensure efficacy.

> In terms of content the engagement with the public, it's a simple rule that it needs to be as simplistic as possible, it needs to be factual, it needs to be accurate and it needs to be concise, and essentially on those principles whatever we put out will follow that. (PROA-05)

> It's not always possible and I think that's one of the challenges, is people want a really simple message and organisations want to provide a really simple message but actually a lot of the messages that we're trying to get out are really complex. And I think there's a real balance to be struck about things being easy to understand and comprehend, and giving people all the information. And I think that's something that we struggle with. (PROA-10)

A few emergency planners also highlighted the importance of ensuring message consistency between sources and mediums.

> It will be important to ensure that messages to the public are consistent across all agencies, reach all sections of the local community and are effective.[240]

> …we would try and align ourselves with people that were in a similar business to us, their shared experience, knowledge, and consistency because actually our student population in London, they'll have friends in King's, they'll have friends in UCL, so yeah … if we're all speaking and sending out the same messages, hopefully they'll believe it! (PRYA-13)

As would be expected, both national and local practitioners responsible for pandemic flu planning were aware that PHE would be the lead agency if there was an outbreak.

> The usual response is that the health and safety advisor would get advice from those people in the know, Public Health England and the like, publicise that on the internal website to the staff and also on our external website should we need to communicate with students. (PRYA-05)

> … it's just that if we're generating it then quite often we will give people the bare bones of an incident and the advice that we've received from whoever is the lead organisation, if that's the Fire Brigade or Public Health England or the Environment Agency. (PROA-06)

[240] London Borough of Barking and Dagenham, "Barking & Dagenham Multi-Agency Pandemic Influenza Plan.", 25

However, a few university emergency planners indicated their reference would be the Health Protection Agency, despite this having been closed in 2013 when PHE was established.[241]

> We would be looking for direction from the Health Protection Agency as to what precautions we should be taking. (PRYA-09)

> So we would take, in terms of the pandemic and that, we would take the lead from either NHS England or the Health Protection Agency, or Health Protection England as they are now. (PRYA-02)

Although emergency planners were consistent in their view of PHE as having the lead in a pandemic and of being a primary source of information, a few individuals did highlight the potential difficulty arising out of a disparity between national level communications and regional experience.

> Because we have the understanding of our populations, national goes through regional, London is seen as something quite different, again because of the complexities of the travel networks, the populations and the diversity and the transient nature of everything. So I would take the London side of things rather than any national stuff… (PROA-09)

> I actually worked in the West Midlands in 2009 and that was where a lot of the cases were. They were particularly in schools and so there was a real communications challenge to those pupils and their families. They're hearing the national message is … it's relatively low levels of flu, and yet they're seeing in their school that their child goes to, 50/60% of the class was off ill. And trying to manage that, the mixed messages because of the audience, you're talking to a very discreet audience in the school but then a much wider audience that PHE are nationally talking to, and I think trying to get people to understand that was a challenge. (PROA-10)

3.5.2 Communication Methods

Communication, to be effective, must not only consider content, it must also be successfully disseminated to the public. This, in turn, requires consideration of the methods, media, or forums used to communicate with the public. The UK Influenza Pandemic Preparedness Strategy references the need to use a variety of media in order to reach the public.[242] The need for this multi-media, or multi-forum, approach was also referenced by university planners despite having a relatively homogeneous (as compared to the general population) and accessible population.

[241] Health Protection Agency, "Health Protection Agency Has Closed."
[242] Department of Health, "UK Influenza Pandemic Preparedness Strategy 2011.", 47

> If anything in halls, I think being able to give them a leaflet, that's something tangible, I think we would need to do mass communication and in more than one format because otherwise you're gonna miss people. So there could be announcements in lectures, at the beginning of a lecture, so that they're face to, and where they could ask questions. And we could put information up on the revolving boards, we could give information by email…. (PRYA-10)

> We have various methods of communication, so the online portal for students, we also use social media, Twitter, Facebook, email, the university is formed of four colleges, so all the resident students belong to a college and then there is a head of college and a pastoral team for that college. So they maintain a close information relationship with the students of their college, so information would flow out in that way. There's also our central comms team who can put information onto the bulletin board, so there would be physical posters going up. (PRYA-09)

The use of multiple formats or methods to reach the public is also key to ensuring communication is disseminated across different population groups; with a particular focus on ensuring communication with vulnerable populations.[243] Generational differences in communication preferences were often referenced as an example where different communication methods would be required.

> And that's one of the things with pandemic, it's not like a lot of the emergencies we deal with where you're fighting against time, it doesn't just creep over the horizon, you start to detect it some time off… I think it's over a 15-week cycle anyway which is a long, long time, albeit very challenging. I think you get plenty of time to think it through, who you need to tell, how you need to tell them, your different communication methods; so for young people you'd be using social media and stuff like that, for elderly people you'd be using the clubs, the different forums they engage with, of which there's lots. (PROA-07)

> So primarily through our business improvement districts, we've got three of them in [London borough], so we'd reach out to all of them and we try and filter that information through multiple avenues if you like, bearing in mind that different populations and different age groups will respond or receive information from different communication methods. So social media primarily for schools and things like that and probably with our vulnerable residents and our older generation it'd be flyers, posters, actual visits from frontline professionals, things like that would be our main conduit of getting information to them. (PROA-05)

Amongst national and local practitioners there was a lack of consensus regarding general levels of trust in authorities, although many leaned more toward a lack of trust.

> I have to say I think in the current, and this is my personal opinion, I think in the current climate with the government that we've got, there is so much unrest and disbelief. (PROA-09)

[243] Beveridge and Sellwood, "Pandemic Influenza Framework.", 23

> A trusted source? Sometimes yes, sometimes no, it's really difficult…. … I think the government message itself is a really hard one because sometimes they're trusted and sometimes they're not and that can change on the flip of a coin, it can change during an outbreak. (PROA-12)

A few practitioners also highlighted that trust in authorities may vary depending on the source with some agencies or individuals having higher levels of trust than others.

> Yeah, yeah I do. I think all the statutory agencies are trusted in this borough. The council and the police tend to suffer a little bit at the hands of local press, certainly from when I was a fire commander here, they kind of love the fire brigade, we didn't seem to be able to do much wrong to be fair. (PROA-07)

> So what can we do at a local level, who is the trusted spokesperson at a local level? It might not be your town mayor, they might not have any medical history or they might not have a good reputation, so at that local level who can we find to get those messages out and I think it really is that tier-ing of it, who can we have? (PROA-13)

When dealing specifically with the context of pandemic, however, there was a general agreement that on this type of issue, the public would consider the authorities to be a trusted source of information.

> They don't necessarily believe everything that we say to them, well, not everybody believes everything we say to them. The council is a body which is led by… there are elections and different political points of view come into play and so forth, but I don't think that a pandemic is seen as a political issue. (PROA-11)

> Yeah, I think in something like this they probably are. If you're trying to explain something else, sometimes there is a slight element of it's the institution telling us it's this, we need to question it, but I think where you are telling them something around health and safety, around being responsible, I think it's less questionable. (PRYA-03)

3.5.3 Older Adult Population Information Needs

Several emergency planners identified population specific considerations that would need to be taken account in communication planning. Three main sub-themes emerged around accessibility, comprehension, accessibility and, acceptance of communication.

The diversity of age as well as general capability and engagement with technology within the older adult population was highlighted as a potential communication challenge.

> I think with the older adults these days a lot of stuff is on social media, a lot of information is on webs and internet, whether it's Yahoo, Google or whatever search engine and a lot of people don't have access to that. A lot of them are quite good with technology but there are groups that aren't really that good because they come from a generation, 'Oh no!' If you say to them, 'There's your mouse, there's your cursor there,' they look at you and think it's a mouse, a real mouse that runs around with whiskers and ears and stuff, they don't get it. (PROA-01)

> It is, because you do get people going to work still and then you get the other extreme where it's not happening and they're not looking at the wifi and they're not looking at phones and they don't want a phone and cash, there's people on Direct Debits and there's some cash. (PROA-02)

A further challenge in ensuring communication reached older adults was identified in regards to targeting lonely or socially isolated older adults.

> No, it's very weird and I think there are a lot of very, very lonely people who are over sixty in London. I always think there's an invisible group out there. (PROA-01)

> It's a hard question to answer because the thing is it's just a reality that different audiences you have to think a bit about how we're gonna reach them. I guess probably the biggest problem or biggest problem group are those that are very socially isolated, so we do know that there are older adults who their friends kind of die-off and they end up very alone and isolated. (PROA-11)

In addressing the perceived information needs of older adults, several practitioners identified comprehension as a potential barrier, with some older adults requiring additional assistance in interpreting or understanding communication material.

> Large letter format in … some people are English but some people speak … a lot of Turkish, but bigger, large letters, maybe a few colourful pictures that they can get them to see and understand. (PROA-02)

> I don't think they need more messaging 'cause I think the messaging that comes out from Public Health is sufficient because they do a separate one for vulnerable residents but it's making sure that is understood by all the key partners and making sure social workers, and even our private providers, and making sure they're having those conversations with the clients, and making sure the message is clear to them. (PROA-03)

Older adult responses to a pandemic, and, more specifically, to pandemic communication, were assumed to be broadly accepting through perhaps with some trepidation or reluctance.

> I think it depends on how it's relayed to them as well, if you give them that information and let them make the decision as to what they want to do, that's fine. As I said, I don't know all 803 members [of the older adult activity program] but the ones that I do know certainly seem to be quite headstrong! You know, 'We will not be moved,' it's that old British bulldog kind of… 'No one's going to tell us what to do or where to go,' kind of thing! And then there are others who are a bit more… but generally I think they would take the advice on board. (PROA-01)

> We'd like to think that they're gonna be informative and they'll take them on face value and they won't panic. However, you have to kind of expect that there's gonna be a lot of apprehension and fear as well, so we'd be in that conversation with the police about community tensions and things like that. (PROA-05)

3.5.4 Younger Adult Population Information Needs

In addressing the information needs of younger adults, practitioners expressed that clear information explaining the state of the pandemic as well as general medical information, such as symptoms and how to prevent becoming ill would be paramount.

> I think they need to be advised about where they could get a vaccination and how soon and the proximity, 'cause they won't go anywhere, they would need it fairly close by. And I think they need very simple information about the difference, how they could tell the difference between it being a cold and flu, and what to do if they think it's a cold and what to do if they think it's the flu. (PRYA-10)

> I think they're no different to most of the public and they want certainties and it's very difficult to give them those messages, but I think the most important is consistent information and facts about how we know that these types of diseases are spread. (PRYA-13)

Several practitioners also expressed the view that younger adults inclination to take the pandemic seriously would vary depending on whether they perceived a personal risk.

> …I think they'd probably want clear information on what the risks are and how it is transmitted so they know what they can and what they should or shouldn't do to prevent them getting it because there is that certain kind of personal, 'I don't want to get sick, I don't really want other people to get sick but I certainly don't want to get sick,' so that's probably what a lot of people focus on is how to make sure you don't get whatever the pandemic is. (PRYA-03)

> I think there would be a lot of concern, particularly if cases were evident here on the campus, it's like a lot of… take fire, you bang on about fire safety and until there's actually a fire they don't think gonna happen to them. So I think in the media that would raise concern, that would raise awareness. If we're also communicating hopefully that will also put it into the context we're seeking to put it into, so I think the concern would go up dramatically when people became aware

> that there were cases on the campus because that's when they begin to think, 'I might catch this,' with an influenza pandemic. (PRYA-09)

Perceived student responses to a pandemic, and specifically pandemic communication, were assumed to be somewhat varied.

> Well, there would be those that would read absolutely every word and would be really well informed and grateful that they'd been kept informed. There would be others that would be absolutely hacked off that someone's wasting their time giving them this information because it's not necessary, and there are those that actually won't read it now but will keep it 'til later and will refer back to it if necessary, so there's more than one way that they will respond. (PRYA-10)

> I think with anything you'll have extremes, you'll have a few students who will be demanding that we do more quicker and better and louder… …And there will be others that will just ignore it and not be interested and not follow any kind of direction whatsoever and the vast majority will be somewhere in the middle where they'll be, 'Oh, I've heard about that, [University is] doing something, OK, I'll come along and get my injection,' or, 'OK, I'll wait for the updates.' I think the majority would be reasonable! (PRYA-06)

The prevalence of international students in universities in London was also considered to influence student responses to an influenza pandemic through the introduction of additional linguistic and cultural considerations.

> We have a lot of overseas students like a lot of universities in general but universities in London in particular and that means that there are additional things that you have to factor in. In the UK it can go from language to different cultural expectations to whatever else it might be, so having overseas students adds a different dimension. (PRYA-03)

> I think that they do need consideration because their expectations are different, so depending on which country they come from, they have very different expectations on what they should receive from the health service, for example, and we have international students, some, who will call an ambulance, because they sneezed, and others who are at death's door and don't want to bother anybody. And much of that is to do with the culture from where they come from and what their expectation that they bring with them is, so I think there is a different piece of work about that. (PRYA-12)

Additionally, one practitioner highlighted that, as students are often quite politically active, there was the possibility that they might be less receptive to information due to an existing anti-establishment opinion.

> From our perspective, it is the fact that we have a very diverse population. … ... But also, there's also a similar type of issue around the academic cohort as well. They also have very strong opinions, and some of them are quite happy to argue against the World Health Organisation, PHE, whatever. (PRYA-02)

3.5.5 Communication Challenges

Whilst effective communication with the public is acknowledged as a key element of national and local pandemic planning, several challenges have been identified in planning documents and by practitioners as potential barriers to good practice.

The unpredictable nature of a pandemic, both in terms of timing and virus characteristics (severity, virulence, etc) creates a potential challenge in ensuring that timely, accurate information is provided to the public. Due to the limitations of scientific or medical knowledge at the outset of a pandemic, it may prove difficult for emergency planners to ensure the public is receiving clear information that meets their needs. Furthermore, government must communicate the uncertainty around the pandemic and the potential for future changes or variances in information content in a fashion that does not jeopardise public confidence in future messaging.[244]

Although many pandemic planning guidance documents reference the need to ensure communication is relevant for identified (whether at-risk or vulnerable) populations, the practical aspect of this type of communication was identified as a potential challenge by a few emergency planners.

> I think we are pretty bad, as organisations, at communicating with the public, we tend to put one size fits all blanket communications, although we do try to make use of the networks that we've got access to. So particularly when we're talking about vulnerable adults, we would make use of the care providers that we have close relationships with, with the care homes, schools, things like that, but in terms of targeting particular groups we're just not at that level of complexity. (PROA-06)

> I think on the surface of it, when we're planning for these sorts of things, I think it's easier to just do a one-hit communication and then you're confident that everyone's got the same message at the same time… …But I think our recent experience over recent months is that actually different groups require different things, they require it in different ways and they also have differing levels of background knowledge. … … So I think what's become really apparent to me, certainly over the last couple of months, is that we need to be much more nuanced in how we communicate with people, both in terms of how we do that but also what we communicate. (PROA-10)

[244] UK Department of Health Pandemic Influenza Preparedness Team, "UK Influenza Pandemic Preparedness Strategy.", 45 and Australian Department of Health, "Australian Health Management Plan for Pandemic Influenza.", 57

Challenges around effective communication during a pandemic are not limited to message content as ensuring message saturation brings about its own challenges relating to medium and accessibility. The linguistic and cultural diversity of the population in a city such as London can create communication barriers.

> So I think that's a challenge. Languages is a challenge. There are a lot of people that English isn't their first language so you're trying to think about how you can communicate with those groups that might not be receptive to the general message, either because they don't receive it, because some people are very isolated within that community, or that they don't understand it even if they do see it. I think that's a challenge. (PROA-10)

> I think we would definitely have a problem with communicating with certain groups, both boroughs, particularly [two London boroughs], there's some areas there's quite low levels of English being the first language. I'm not sure the degree to which that's changed since 2011, the willingness of people to listen to public health messages I think are not always that high in migrant communities, particularly transient ones that aren't there for very long, so there that would be a massive, massive challenge. (PROA-06)

Additionally, ensuring that communications are received by hard-to-reach populations (or individuals) was highlighted by both London emergency planners and university administrators as a potential challenge.

> There will always be difficulty in reaching every single student because there are some who don't read their emails every day, they perhaps haven't uploaded the app, they don't come onto campus every day… (PRYA-10)

> I think it is gonna be quite a challenge, particularly people who are housebound, so even if you distribute flyers and posters and put it on social media they're not necessarily gonna see it. So it's ensuring that you get that communication across to those individual residents, which is a challenge at the beginning when you've got quite a lot of resources, but when you get further into the pan flu arguably they become more at risk because there's more contagion, if you like, or whatever and we have less resources because our staff are going off sick. So there could be a kind of issue there in terms of being able to support the most vulnerable group of individuals. (PROA-05)

Furthermore, emergency planners may be unaware of the best ways to reach potentially vulnerable populations such as older adults is a challenge for them.

> Well, you kind of look at, OK, what's the group and what's the best way to reach them? There's no point in Tweeting to the over 60s, they're not gonna get that, so it's just common sense really. (PROA-11)

> I think we could probably do with knowing how they [older adults] want to be communicated with because I don't think we know that, we make assumptions but

> I don't know that anyone has actually asked them how they want to be communicated with. (PROA-12)

Technology-based media provides a useful and resource-effective way of delivering a message to the public but, over-reliance on technology risks excluding specific, and likely vulnerable, populations from the communications.

> So obviously electronic we can very quickly amend it, the hard copy things, obviously it is gonna be more resource intensive and we have to keep on top of the most up to date information on what's being put out. I guess from a reputational point of view we would need to be seen to be making sure that we make them resources available to support the public, and we would, so even though that might be a strain on our own systems we would support that kind of communication function. (PROA-05)

> I think there was an estimate that there were 10% of London's population, when they had the welfare benefit reform, who didn't have access to internet. … … So bear in mind that [London borough's] population is 330,000 roughly, so 10% of that is 33,000 people that we're not getting in touch with by internet. (PROA-08)

The challenge around communication in relation to technological media and access was also expressed by university administrators, though from the opposite end of the spectrum. University administrators were in agreement that technological media, and, in particular social media, represent an ideal way to communicate with students. The ever-evolving nature of social media, however, creates a challenge for the university in ensuring it is using the most appropriate platforms to reach students.

> I guess part of my challenge, or people who work in student services in universities, their challenges will be around maintaining a stake in how students communicate with each other and with the organisation in order to get messages out quickly. So that's part of the challenge, keeping up with the interests of the age group. (PRYA-01)

> It's trying to keep up with what is their latest thing because we started Facebook because it was good but then a student told me it's only middle aged people like me that use it so then we're like, 'Oh we need to go to Twitter,' but now it's like my nephew's telling me it's Instagram, so it's keeping up with what is the channel that people are accessing? (PRYA-08)

A final challenge identified by some university administrators in reaching students was around the accuracy or accessibility of contact information, in particular phone numbers. Although not identified by emergency planners or in planning documents, this example may also be a challenge for communication more broadly

given the use of texting or mass email platforms in other areas, such as air pollution warnings in London.[245]

> We found, in a different context recently, that a lot of our students' mobile numbers that we have on the student record system aren't accurate. (PRYA-06)

> So, I think there has been more of a focus on making sure we try and keep telephone, mobile numbers up to date, that's enormously difficult, trying to get people to update their records, 'cause the uni takes the details from people when they enrol and then although we do re-enrol every year, which is may be a little bit different to more traditional universities, 'cause students can more easily pause their studies, so we might have slightly more up to date records, but I suspect if talked to someone in Student Journey they'd say … I wouldn't bank on it, I suspect they'll say probably half the numbers we have are historic or something, we don't know how well they work. (PRYA-11)

3.6 Discussion

Pandemic planning and preparedness is effected at a variety of levels, both in government and organizationally or institutionally; such as universities. Successful planning requires cooperation and collaboration between levels to ensure that planning and communication at local and national levels is aligned. Population and demographic characteristics such as age, socio-economics, cultural diversity and population density will influence the needs of the population and must be accounted for in pandemic planning. Business continuity challenges such as a reduction in staff, service provision and a lack of additional resources may affect the ability of government and organizations to function during a pandemic.

Although 'risk' and 'vulnerability' in pandemic planning tend to be considered as separate entities, the distinction between these terms is not always clear, nor is it consistent across jurisdictions. A recurring theme, however, is the use of risk, or at-risk, to denote those individuals or populations who may be more medically susceptible to pandemic influenza and the use of vulnerable to indicate those individuals or population groups who may suffer from adverse social effects. The two categories may overlap, as in the example of the Pacific Islanders in New Zealand who have historically had greater susceptibility to pandemic influenza but

[245] AirTEXT, "Air Quality, UV, Pollen and Temperature Forecasts for Greater London and the South East."

also have socioeconomic factors and cultural preferences which may render them vulnerable as well.[246] Providing a clear division between these terms may prove beneficial for emergency planners both in a structural sense (clear division between medical risk and social vulnerability) and in terms of communicating with the public (ie: differentiating between risk and vulnerable in the context of vaccination priority lists).

A World Bank report on poverty defines the two terms by clarifying a distinction between 'risk-related 'vulnerability' to poverty' and 'vulnerable' groups whose chronic poverty requires specific attention.[247] From a pandemic planning perspective, this could be re-defined, or interpreted as distinguishing between risk as medical susceptibility to pandemic influenza (ie: individuals or groups who may be more prone to higher morbidity and mortality) and 'vulnerable' groups whose circumstances require specific attention (ie: individuals or groups who may be reliant on external carers or linguistic minorities). For the purposes of this research, where not otherwise specified, the above definition will be used to clarify 'risk' vs 'vulnerability'.

Communication with the public during a pandemic is key to encouraging the uptake of protective behaviours. Planning guidance documents and practitioners support the use of clear, concise messaging which provides general medical information (ie: risks, what protective actions can be taken) to meet public information needs during a pandemic. To ensure messaging reaches the population as a whole, methods of communication need to be carefully considered and a wide array, or multi-media approach must be undertaken using a mix of traditional and new media sources. Access to media is not the only potential barrier to effective communication as linguistic or cultural barriers may also exist and will need to be addressed.

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[246] New Zealand Ministry of Health, "New Zealand Influenza Pandemic Plan: A Framework for Action."

[247] Hoogeveen et al., "A Guide to the Analysis of Risk, Vulnerability and Vulnerable Groups.", 4

3.7 Chapter Summary

This chapter addressed existing guidance, planning, and challenges around pandemic preparedness at an international, national, and local level. Pandemic planning is complicated by a number of factors including institutional responsibilities, population considerations, and communication challenges. Although pandemic planning occurs at multiple institutional or governmental levels, planning and approaches to preparedness are not always consistent, particularly as regards concepts of risk and vulnerability which lack a clear and uniform definition.

The next chapter will examine the theoretical principles influencing this research.

4 Chapter IV: Risk Perception and Behaviour Change

4.1 Chapter overview

This chapter outlines the theoretical underpinnings of this study and addresses the importance of understanding risk perception to encourage behaviour change during large-scale infectious disease outbreaks. In order to develop an explanatory framework that is capable of identifying key principles for communication with at-risk populations during an influenza pandemic, this chapter will introduce psychological theories of risk perception and behaviour change. Further, this chapter will identify how Protection Motivation Theory (PMT) [248] and the Capability, Opportunity, Motivation – Behaviour (COM-B)[249] model can be used to understand behaviour change in a way that has the potential to improve health outcomes during an influenza pandemic through effectively encouraging the adoption of recommended protective behaviours.

4.2 Risk Perception

Public responses to extreme events are influenced by the nature of the event and also by their perceptions of the event. Aum Shinrikyo's 1995 sarin to attack the Tokyo subway resulted in 13 fatalities and more than 1,000 people suffered from exposure to the nerve agent however an additional 4,500 individuals were considered psychological casualties or 'worried well'.[250] Although estimates of those affected by the attack vary somewhat depending on the source[251], research indicates that a significant number (between 73.9% and 85% of patients evaluated at hospitals following the attack) demonstrated no signs of exposure to nerve agents.[252] A failure on the part of the authorities to convey accurate and timely information not only resulted in a surge of low risk patients seeking medical care but also had long term psychological implications for residents of Tokyo with some

[248] Rogers, "A Protection Motivation Theory of Fear Appeals and Attitude Change."
[249] Michie et al., *ABC of Behaviour Change Theories*.
[250] Beaton and Murphy, "Psychosocial Responses to Biological and Chemical Terrorist Threats and Events. Implications for the Workplace."
[251] Tucker, *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons*., pg 219
[252] Stokes and Banderet, "Psychological Aspects of Chemical Defense and Warfare"; Stone, "The 'Worried Well' Response to CBRN Events: Analysis and Solutions."

individuals experiencing effects including 'fear of commuting, absenteeism from work, lack of trust in public authorities, insomnia, de- pression, anxiety, and uncertainty about long-term health impacts'.[253]

Understanding how people perceive and process risk is necessary in order to affect behavioural intentions and subsequent actions. Consider, for example, the ongoing debate over childhood vaccination. Although it has long been established that vaccination is a safe and highly effective way to prevent illness, the publication in the Lancet of a paper linking the MMR vaccine and autism provoked an anti-vaccination movement. Despite this research being roundly discredited, the anti-vaccination movement has persisted and, in so doing, altered the perception and estimation of risk for many people.[254] Sporton and Francis found that, though non-immunizing parents often listed more than one reason for their decision, their concern over the risk of adverse effects on their child was referenced in each case. Despite recognizing the deleterious nature of the 'awful disease' the vaccine sought to prevent, avoidance of immunization was seen as 'the lesser of two evils'[255].

As evidenced in the examples above, factual considerations may not be the primary, much less sole, influencer in determining perceptions of risk. Risks that are more likely to cause concern are not necessarily the risks that are more likely to cause harm as risk perception is influenced by a wide variety of factors.[256] Activities that are voluntary or familiar are often seen to be less risky than those that are involuntary or unfamiliar.[257] Similarly, if control of a risk is perceived to be external (ie: under the control of others), the risk is more likely to be perceived as higher than if under one's own control. Further to this, naturally occurring events

[253] Lemyre et al., "A Psychosocial Risk Assessment and Management Framework to Enhance Response to CBRN Terrorism Threats and Attacks."
[254] Andre et al., "Vaccination Greatly Reduces Disease, Disability, Death and Inequity Worldwide"; Sathyanarayana Rao and Andrade, "The MMR Vaccine and Autism: Sensation, Refutation, Retraction, and Fraud."
[255] Sporton and Frances, "Choosing Not to Immunize: Are Parents Making Informed Decisions?"
[256] Covello, "Strategies for Overcoming Challenges to Effective Risk Communication."
[257] Evans, Bostrom, and Johnston, "Risk Communication and Vaccination: Summary of a Workshop."

('Acts of God') often provoke lower levels of risk perception than those generated by human acts whether intentional or otherwise.[258]

Additional factors influencing public perceptions of risk are the probability and the severity of an event. Low-probability, high-consequence events that result in multiple deaths are described as dread risks and tend to produce greater psychological effect and behavioural change than events encountered on a daily or regular basis.[259] Activities or occurrences, therefore, that are perceived to have the potential to cause a number of fatalities within a set or discernible time and space are frequently considered to be of higher risk than those occurring over a random period of time and geographic area.[260] Sheppard's risk perception matrix categorizes perceptions of risk according to two axes: dread vs. non-dread and known vs. unknown. Dread vs non-dread divides risks according to controllability, non-fatal consequences, easy reducibility and whether a risk personally affects a particular individual. Known risks are observable, have immediate effect, and would be classed as 'old' risks; while unknown risks are the opposite.[261] This echoes the work by Gigerenzer and colleagues which post that, following the attacks of 9/11, fears over recurring terrorist activity in the aviation sector prompted many people to avoid air travel even though the probability of dying on a flight from Boston to New York (215 miles) was the same as driving 12 miles in a vehicle. During this same period, there was a significant increase in interstate highway traffic, along with an increase in fatal crashes when compared to previous years. Consequently, Gigerenzer et al. argue that terrorist activity may have contributed to the deaths of an estimated 1,500 Americans on the highway due to an increase in motor vehicle activity (a controllable risk) as a way to avoid the perceived risk of air travel.[262]

[258] Covello, "Strategies for Overcoming Challenges to Effective Risk Communication."
[259] Gigerenzer, "Out of the Frying Pan into the Fire: Behavioral Reactions to Terrorist Attacks."
[260] Covello, "Strategies for Overcoming Challenges to Effective Risk Communication."
[261] Sheppard, "Mitigating Terror and Avoidance Behavior through the Risk Perception Matrix to Augment Resilience."
[262] Gigerenzer, "Out of the Frying Pan into the Fire: Behavioral Reactions to Terrorist Attacks."

Prior experience or exposure to a particular risk may also affect risk perception as the familiarisation to the event can move a previously unknown risk closer to the known category such as during the Second Intifada where the regular recurrence of terrorist attacks resulted in a level of complacency amongst the public.[263] Other studies have also shown that past experience with extreme events may also reduce perceptions of risk[264]. During hurricanes, for example, many older adults have opted to shelter in place rather than evacuate as they had either survived previous incidents unharmed or had evacuated unnecessarily in the past[265]. Conversely, a study examining risk perception relating to floods and landslides in Taiwan found that participants who had experienced a disaster perceived a higher risk due to previous experience of financial or other losses.[266] In both instances, it would appear as though the effect of the previous experience, whether the risk was borne out or overrated, contributed to risk perception. In order to encourage positive behavioural responses to a major event such as a pandemic we therefore first need to understand the risk perceptions that shape these behaviours.

4.3 Behaviour Change

4.3.1 Psychological Models of Health-Related Behaviour

Psychological models of health behaviour recognise the importance of risk perception for understanding behavioural responses to extreme events. These models have established that behavioural responses are influenced by a variety of factors including risk perception but also considerations such as belief in the effectiveness of a response or action (response efficacy) and belief in one's own ability to perform a particular behaviour (self-efficacy).

[263] Sheppard, "Mitigating Terror and Avoidance Behavior through the Risk Perception Matrix to Augment Resilience."
[264] Pietrzak et al., "Posttraumatic Stress Disorder, Depression, and Perceived Needs for Psychological Care in Older Persons Affected by Hurricane Ike."
[265] Christensen, Richey, and Castaneda, "Seeking Safety: Predictors of Hurricane Evacuation of Community-Dwelling Families Affected by Alzheimer's Disease or a Related Disorder in South Florida."
[266] Ho et al., "How Do Disaster Characteristics Influence Risk Perception?"

The Theory of Reasoned Action (TRA) was one of the first attempts to better understand the link between attitudes and behaviours. The Theory of Reasoned Action proposed that intention was the best indicator of future behaviour and is the result of an individual's attitude toward, or evaluation of a behaviour combined with subjective norms (ie: social pressure) concerning the behaviour.[267] The Theory of Planned Behaviour (TPB) was developed to address limitations of TRA the Theory of Reasoned Action. TPB incorporated a third component, 'perceived behavioural control'.[268] Perceived behavioural control refers to the perceived ease or ability to undertake a particular behaviour and is considered to influence not only behavioural intention but also behaviour itself.[269] TPB with the inclusion of perceived behavioural control, was found to have greater explanatory ability than the theory of reasoned action.[270] In the case of, for example, vaccination during an influenza pandemic, TPB would propose that behavioural intention would be affected not just by a belief in the efficacy of the vaccine and societal encouragement to vaccinate but also by logistical ease of obtaining a vaccine. The Theory of Planned Behaviour has been used in several studies on pandemic influenza, in particular intention to vaccinate.[271] In this context, however, an amended version of the theory has also been applied. For example, in one case, researchers included elements of the Health Belief Model[272] and, in another, additional factors such as anticipated regret were included.[273] Both studies which used an amended TPB found that their enhanced models were an improvement on the original theory as they provided additional explanatory power through the inclusion of additional factors affecting behaviour.

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[267] Morris et al., "Theories and Models of Behaviour and Behaviour Change."
[268] Michie et al., *ABC of Behaviour Change Theories*.
[269] Dickerson, *Social Psychology: Traditional and Critical Perspectives*.
[270] Madden, Ellen, and Ajzen, "A Comparison of the Theory of Planned Behavour and the Theory of Reasoned Action."
[271] Agarwal, "A/H1N1 Vaccine Intentions in College Students: An Application of the Theory of Planned Behaviour"; Myers and Goodwin, "Determinents of Adults' Intention to Vaccinate against Pandemic Swine Flu"; Liao et al., "Factors Affecting Intention to Receive and Self-Reported Receipt of 2009 Pandemic (H1N1) Vaccine in Hong Kong: A Longitudinal Study."
[272] Myers and Goodwin, "Determinents of Adults' Intention to Vaccinate against Pandemic Swine Flu."
[273] Liao et al., "Factors Affecting Intention to Receive and Self-Reported Receipt of 2009 Pandemic (H1N1) Vaccine in Hong Kong: A Longitudinal Study."

An alternative approach, the Health Belief Model (HBM) was an early model that aimed to explain preventive health behaviour.[274] This theory posits that, in order for an individual to adopt protective or preventive health behaviours, he or she would first need to believe that they were susceptible to the illness under consideration; that, if contracted, this illness would have at least a moderately severe effect on their life, and that the adoption of a particular behaviour would be beneficial in either reducing the susceptibility to or severity of the illness. Additionally, the behaviour should not require overcoming particular psychological barriers such as 'cost, convenience, pain, or embarrassment.'[275] Thus the perceived pain associated with vaccination could create a barrier to action.[276] Early research using the principles of the HBM found that the uptake of preventive health activities (tuberculosis x-ray screening and dental check-ups) was influenced by perceptions of susceptibility and an understanding that undertaking these behaviours could prevent more serious effects.[277] The model has been applied to a variety of health challenges including preventive behaviours and adherence.[278]

The Health Belief Model has been used in research on pandemic influenza and behavioural response. Research on vaccination rates of health care workers found the HBM provided a useful structure for understanding aspects contributing to vaccine uptake such as perceived barriers and benefits of vaccination, perceived vulnerability to infection, perceived severity of the illness, and additional stimuli which could encourage vaccination.[279] Further research on vaccination rates, in this case with university students and grocery store patrons found that perception of barriers, a history of influenza vaccination, and medical advice were predictors of intention to vaccinate. Conversely, this study found that perceived susceptibility

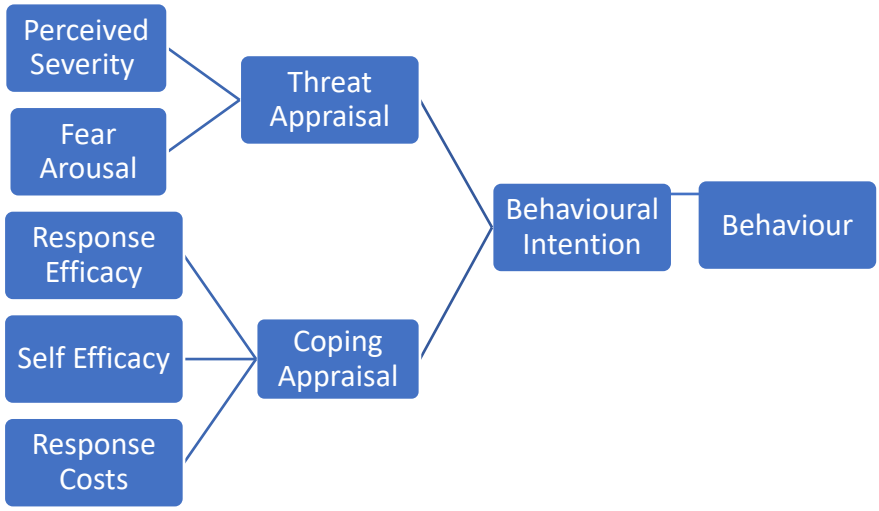
[274] Rosenstock, "Historical Origins of the Health Belief Model."
[275] Rosenstock.
[276] Yang, "Predicting Young Adults' Intentions to Get the H1N1 Vaccine: An Integrated Model."
[277] Abraham and Sheeran, "The Health Belief Model."
[278] Abraham and Sheeran.
[279] Prematunge et al., "Factors Influencing Pandemic Influenza Vaccination of Healthcare Workers--a Systematic Review."

was not a significant predictor of intent to vaccinate.[280] The relationship between perceived susceptibility and vaccination has been observed in other studies as well though the strength of this relationship has varied by study.[281]

A further model, Protection Motivation Theory (PMT), was developed to explain behavioural responses to health threats.[282] PMT attributes the adoption of protective behaviours to threat and coping appraisals (see Figure 4.1). Threat appraisal consists of judgments about the perceived severity of the threat and the perceived vulnerability to the threat.[283] In the case of an influenza pandemic this could be affected by the extent to which an individual considers the pandemic, in general, to be a real threat as well as the extent to which an individual believes he/she may be personally vulnerable to becoming ill or worse. Coping appraisals are affected by perceptions of efficacy of a particular behaviour as well as perceptions of self-efficacy. For example, an attempt to promote respiratory hygiene (ie: using a tissue to cover a cough or a sneeze) will be influenced by whether an individual perceives this to be a useful mechanism to prevent the spread of illness as well as whether he/she feels this is an action they have the ability to perform successfully.[284] These four perceptions (severity, vulnerability/probability, efficacy of response and self-efficacy) form the basis of PMT.[285]

[280] Coe et al., "The Use of the Health Belief Model to Assess Predictors of Intent to Receive the Novel (2009) H1N1 Influenza Vaccine."
[281] Coe et al.
[282] Michie et al., *ABC of Behaviour Change Theories*.
[283] Neuwirth, Dunwoody, and Griffin, "Protection Motivation and Risk Communication."
[284] Neuwirth, Dunwoody, and Griffin.
[285] Maddux and Rogers, "Protection Motivation and Self-Efficacy: A Revised Theory of Fear Appeals and Att."

Figure 4-1 Protection Motivation Theory



Adapted from: Rogers

PMT also posits that fear appeals can contribute to behaviour change, whether positive or negative, and is linked to an individual's assessment and perception of a threat. Threat perception, in turn is influenced by the severity of an event, the likelihood of the event occurring and the efficacy of a given response.[286] PMT requires that all three variables be activated in order to trigger intent to change behaviour. If an individual perceives severity and effective response but no personal threat, they are less likely to take action.[287] Additional factors, however, are also identified which may also affect behavioural intention. These are intrinsic and extrinsic rewards (such as pleasure or social approval) and response barriers (ie: costs) as potential enablers or obstacles to action.[288] A review of research involving fear appeals concluded that fear appeals can influence behavioural intent however they may have a negative effect if the public does not have confidence in the efficacy of the actions they can take to protect themselves.[289]

[286] Rogers, "A Protection Motivation Theory of Fear Appeals and Attitude Change."
[287] Rogers.
[288] Prentice-Dunn and Rogers, "Protection Motivation Theory and Preventive Health: Beyond the Health Belief Model."
[289] Witte and Allen, "A Meta-Analysis of Fear Appeals: Implications for Effective Public Health Campaigns."

PMT has been applied to studies examining factors influencing behavioural responses in the context of pandemic influenza.[290] Research to date on pandemic influenza using PMT has largely focused on two behaviours; vaccination and voluntary isolation (either staying home when ill or reducing external contact during a pandemic). A 2007 study researching the relationship between taking precautionary behavioural actions and risk perceptions of influenza also used PMT in developing the study and found it a useful model to identify the key factors.[291] An additional study examining influences on willingness to vaccinate found PMT to be 'a useful framework for understanding the psychological and demographic factors affecting intentions and uptake of H1N1 influenza vaccination'.[292] A 2011 study examined behavioural responses to pandemic influenza and willingness of participants either to remain at home when ill or to go to work when healthy. The researchers concluded that the relationship between behavioural intentions and perceptions of risk and efficacy of response supported the theoretical principles of PMT.[293]

4.3.2 COM-B Model

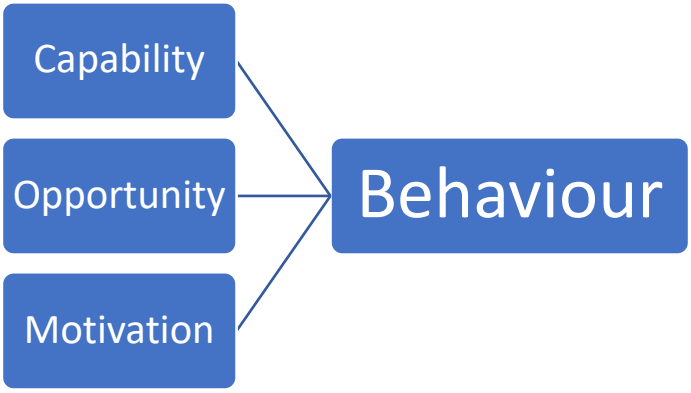
The differences in the models presented in the previous section have led to the development of initiatives to reconcile these theoretical approaches, to better understand and enable behaviour change. In *ABC of Behaviour Change Theories*, Michie et al identify 83 separate behaviour change theories.[294] In some cases these theories are clearly targeted towards understanding a particular behaviour[295], usually an addictive behaviour, or illness[296]. It therefore falls to the researcher or practitioner to determine which theory is best able to address and interpret the behaviour under study. This task is often made all the more challenging as many

[290] Teasdale et al., "The Importance of Coping Appraisal in Behavioural Responses to Pandemic Flu"; Bish et al., "Factors Associated with Uptake of Vaccination against Pandemic Influenza: A Systematic Review"; Sadique et al., "Precautionary Behaviour in Response to Perceived Threat of Pandemic Influenza."
[291] Sadique et al., "Precautionary Behaviour in Response to Perceived Threat of Pandemic Influenza."
[292] Bish et al., "Factors Associated with Uptake of Vaccination against Pandemic Influenza: A Systematic Review."
[293] Teasdale et al., "The Importance of Coping Appraisal in Behavioural Responses to Pandemic Flu."
[294] Michie et al., *ABC of Behaviour Change Theories*.
[295] Michie et al.
[296] Michie et al.

theories have overlapping elements.[297] In response, therefore, to concerns that behaviour change theory had become overly complex and lacked substantive guidance on appropriate selection and contextual use of these theories, the COM-B model was developed.[298] There was also a perceived need to better connect research and practice to ensure the science of behaviour change could be incorporated into the development of policy and behaviour change intervention campaigns.[299] As a result, researchers developed the COM-B model to understand the individual components associated with behaviour and, consequently, behavioural change.[300] COM-B associates behaviour with three primary influences: capability, opportunity and motivation (see Figure 4.2). Each of these categories is then further divided into two subsets. Capability refers to the ability of an individual to execute a specific behaviour and consists of physical (strength or skill) and psychological (knowledge or intellectual capacity) abilities.[301] Motivation is defined as 'the processes in the brain that energise and direct behaviour' such as decision-making or emotional reaction.[302] The subdivisions in Motivation are defined as reflective processes (planning) and automatic (impulse).[303] The final primary influence is Opportunity and refers to external influences that facilitate or impede behaviour. Opportunity involves physical opportunities (time and money) and social opportunities (influenced by culture).[304]

[297] Davis et al., "Theories of Behaviour and Behaviour Change across the Social and Behavioural Sciences: A Scoping Review."
[298] Barker, Atkins, and de Lusignan, "Applying the COM-B Behaviour Model and Behaviour Change Wheel to Develop an Intervention to Improve Hearing-Aid Use in Adult Auditory Rehabilitation."
[299] Michie, van Stralen, and West, "The Behaviour Change Wheel: A New Method for Characterising and Designing Behaviour Change Interventions."
[300] Michie, van Stralen, and West.
[301] Michie, van Stralen, and West.
[302] Michie, van Stralen, and West.
[303] Michie, van Stralen, and West.
[304] Michie, van Stralen, and West.

Figure 4-2 COM-B



Adapted from Michie, Van Stralen, and West

In comparison to the theories of behaviour change outlined in the previous section, COM-B is a comparatively recent (less than a decade) addition to the pantheon. It has been used in a variety of health research studies including medical adherence[305], hearing aid use[306] and healthy eating[307]. Although it has been applied in research involving extreme events such as pandemic influenza[308], the examples used to explain COM-B are centered more around 'everyday' health threats as opposed to extreme events, such as smoking cessation, antibiotic over-prescription or increasing physical activity.[309] Indeed, even a case study using COM-B (and its associated Behaviour Change Wheel approach to designing interventions) to prevent illness was focused on an endemic threat (melioidosis in Northern Thailand).[310] The lack of specific focus around perceptions of risk and threat within the COM-B model diminishes the important role these factors play in influencing behaviour change during an extreme event; such as an influenza pandemic. Although perceptions of risk and efficacy would fall under the mantle of 'Motivation', this is not clearly delineated. In this, the strengths of COM-B are also

[305] Jackson et al., "Applying COM-B to Medication Adherence."
[306] Barker, Atkins, and de Lusignan, "Applying the COM-B Behaviour Model and Behaviour Change Wheel to Develop an Intervention to Improve Hearing-Aid Use in Adult Auditory Rehabilitation."
[307] Atkins and Michie, "Changing Eating Behaviour: What Can We Learn from Behavioural Science?"
[308] Rubenstein et al., "Public Preferences for Vaccination and Antiviral Medicines under Different Pandemic Flu Outbreak Scenarios."; Smith et al., "A Systematic Review of Factors Affecting Intended and Actual Adherence with Antiviral Medication as Treatment or Prophylaxis in Seasonal and Pandemic Flu."
[309] Michie, Atkins, and West, *The Behaviour Change Wheel: A Guide to Designing Interventions*.
[310] Michie, Atkins, and West.

its weakness. The intent to create a framework that 'should apply to every intervention that has been or could be developed'[311] resulted in an all-encompassing, general structure. The counter is that, with a such a broad remit, specific characteristics may not be able to be clearly drawn out.

4.4 Understanding the Likely Risk Perceptions and Behavioural Responses of At-Risk Groups During an Influenza Pandemic

The social cognition models focused around individual cognition such as Health Belief Model, Theory of Reasoned Action/Theory of Planned Behaviour, and Protection Motivation Theory were deemed to be most appropriate for the purposes of this research as these theories are aimed at influencing behavioural intentions through perceptions of factors including threat, susceptibility, and behavioural control.[312] As the research will consider how to best communicate with at-risk or vulnerable populations, it is important to understand how, or even whether, these groups perceive themselves to be at risk and what effect this may have on their willingness to adopt protective behaviours.

Risk perception has been established as a key influencer of behavioural intent and forms a cornerstone of Protection Motivation Theory. PMT also highlights the importance of perceptions of efficacy, both in terms of an individual's capacity or capability to perform a particular action and their belief in the utility of said action. While perceptions of risk and efficacy have been successfully applied to a variety of research involving behavioural intentions in a pandemic, it is also important to understand the practical barriers or enablers that affect behaviour. Behavioural intentions may not always equate to behaviour change, which forms the basis of a recurring critique of social cognition theories. Therefore, careful examination of what factors act as enablers or barriers to action should be included in any research,[313] and will be a focus of the studies presented in this thesis.

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[311] Michie, van Stralen, and West, "The Behaviour Change Wheel: A New Method for Characterising and Designing Behaviour Change Interventions."
[312] Conner and Norman, *Predicting Health Behavior: Research and Practice with Social Cognition Models*; Michie et al., *ABC of Behaviour Change Theories*.
[313] Conner and Norman, *Predicting Health Behavior: Research and Practice with Social Cognition Models*.

Whilst this research will examine vaccination and voluntary isolation (staying home when ill or avoiding external contact to prevent inflection) behaviours, it will also include less researched non-pharmaceutical interventions-handwashing and respiratory hygiene. This will allow for an examination of the extent to which barriers and enablers to action are variable across the behaviours. Additionally, the two specific population subgroups selected for this study have different profiles of risk (older adults being traditionally more at risk compared to younger adults) which may be altered in the event of a pandemic. This allows for a comparative analysis of perceptions of risk, willingness to engage in protective behaviour, and communication needs of two distinct age groups.

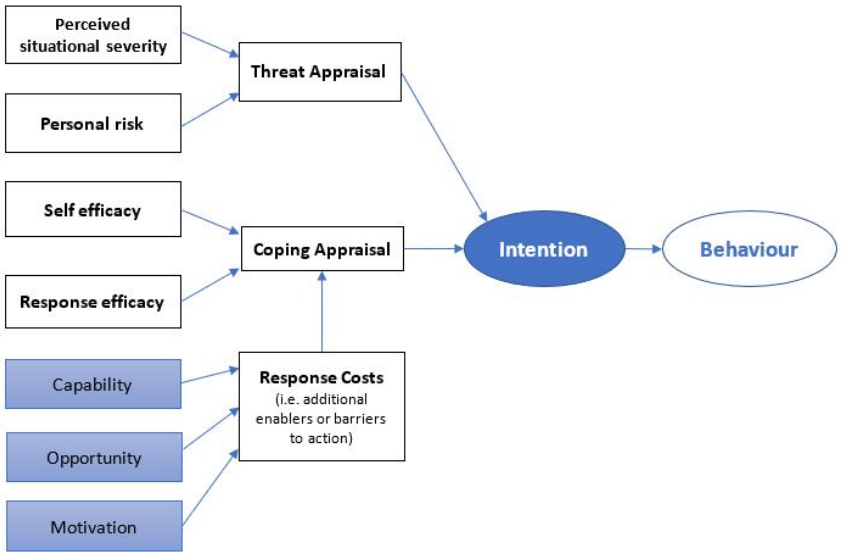
Understanding how perceptions of risk and efficacy affect behavioural intentions, as well as what capability, opportunity or motivational factors may encourage or inhibit uptake of recommended protective behaviours can, in turn, improve the effectiveness of public health communication interventions. These factors provide a number of avenues where communication can potentially be used to effect positive behavioural change by influencing perceptions and recognizing potential barriers and, thereby improve health outcomes in a pandemic.

Although PMT does acknowledge the potential disruptive effect of barriers to action,[314] these are not well codified and are not a keystone of the theory. The focus on risk and efficacy perception allows for consideration of a broad range of key factors influencing behavioural intentions but largely overlooks additional psychological, social, or environmental factors which may also act as enablers or barriers to action. For example, an individual's decision to employ good respiratory hygiene practices (such as 'Catch it, Bin it, Kill it') may be primarily influenced by a perception of the threat or severity of a pandemic and its associated risk to them personally and by whether or not they perceive this behaviour to be a useful preventive measure. Their decision however, may also be influenced, positively or

[314] Conner and Norman.

negatively, by additional factors such as social shaming associated with sneezing into ones' hand or a lack of rubbish bins creating a challenge in disposing of used tissues. Equally, the decision to vaccinate could be influenced by additional psychological factors such as concern over the potential for side effects or pain resulting from the vaccine. This is why the research presented in this thesis, while anchored by PMT, will also incorporate elements of COM-B through the creation of a hybrid model (see Figure 4-3). This will allow for a targeted focus on key PMT factors such as perception of risk, behaviour efficacy, and self-efficacy whilst also integrating additional enablers or barriers to action such as societal or environmental factors in a clear and structured manner.

Figure 4-3 Hybrid Model



Risk perception plays a key role in determining behavioural responses and must be considered when designing effective communication interventions. However, previous research has indicated that whilst threat appraisal predicts the taking of action, this does not necessarily result in protective action.[315] Furthermore, communication interventions that are designed to influence coping appraisals are less likely to raise ethical issues than those aimed at influencing threat appraisals,

[315] Evans, "Nightmare Scenario: The Fallacy of Worst-Case Thinking."

which could create undue stress and concern on the recipient).[316] Consequently, the current study focuses particularly on factors affecting coping appraisal in order to identify areas where communication could be used to boost self-efficacy, response efficacy, and reduce response costs. The COM-B model suggests that capability, opportunity and motivation feed directly into behavior. However, these factors also identify and represent barriers to action which are not directly covered by the psychological drivers identified by PMT. Therefore, these factors can help determine additional barriers which affect response costs. These costs, in turn, influence intentions and, through this, behaviour change. Furthermore, given this research is scenario driven, the results represent behaviour intention, as indicative of behaviour, rather than retrospectively assessing actual behavioural drivers and response (such as the research conducting during and post H1N1 pandemic).

Although PMT has been successfully used for the development of communication interventions of the kind under consideration for this study, as described above it focuses primarily on psychological drivers. This diminishes the role of environmental and material constraints on behaviour. Therefore, for this research, a hybrid model was developed which drew on the strengths of both PMT and COM-B to allow both psychological and contextual barriers/enablers for behavioural change to be identified and taken into consideration during the development of a targeted communication intervention.

4.5 Chapter Summary

This chapter examined contemporary explanatory models of behaviour change, risk perception and their applicability to understanding behavioural intentions and actions in a pandemic context. The research presented in this thesis will rely predominantly on a hybrid model derived from Protection Motivation Theory and COM-B. This will allow for a primary focus on risk perception in relation to behavioural intentions but also allow for the inclusion of potential environmental or

[316] Guttman, "Ethical Dilemmas in Health Campaigns."

societal barriers (or incentives) to action. Effective risk and crisis communication during an influenza pandemic will not only help to inform, but also to encourage the uptake of protective health behaviours amongst the public. Therefore, understanding the factors that influence risk perception will enable targeted public communication to encourage behaviour choices that will lead to improved health outcomes during an influenza pandemic.

The next chapter will describe the methods used in the interviews with older and younger adults presented in subsequent chapters.

5 Chapter V: Methodology - Interviews with Older and Younger Adults

5.1 Chapter Overview

This chapter will outline the study design and methodology used in this research project in order to: clarify how the study design incorporates the theoretical underpinnings of this thesis and answers the research questions, describe the methods used to gather data, and identify ethical issues associated with this thesis and how they have been addressed.

5.2 Study Design

This thesis employs a two-phase, scenario driven exploratory study to examine the perceptions of risk, behavioural intentions, and communication needs of potentially at-risk population groups in order to improve communication during a future pandemic. The first, involved both university students and older adults and used a scenario to explore initial information needs and behavioural intentions in response to the onset of an influenza pandemic. Based on these results, a communication intervention was designed to test the impact of additional explanatory information on risk perception and behavioural intentions. In the second phase, the scenario had progressed to a few months into a pandemic when a vaccine had been developed. The behaviours of interest selected for this study were predominantly non-pharmaceutical interventions (NPI): handwashing, isolation, respiratory hygiene, and seeking medical assistance. These behaviours were selected as they are all actions that could be taken at any stage of a pandemic. In addition, NPIs are within the control of the individual to implement. Vaccination intention was also included as a behaviour of interest, as vaccination is widely acknowledged as a key pillar in preventing the spread of illness[317], although the timeline for implementation during a pandemic may vary.

[317] World Health Organization, "Immunization."

The exploratory nature of this study has led to the use of qualitative rather than quantitative research methodology. Qualitative research methods have been described as preferable to quantitative in circumstances where 'there is little pre-existing knowledge, the issues are sensitive or complex and the maximum opportunity for exploration and inductive hypothesis generation is desired'[318]. This approach allows for the researcher to determine participant perceptions around risk and pandemic and communication needs and to explore these in greater depth than would be allowed by a survey or other quantifiable method. As well, although there has been research on the impacts of pandemics on behaviours, this research has not specifically focused on older adults or other at-risk groups such as younger adults. Qualitative methods are grounded in the notion of 'seeing the social world from the point of view of the actor'[319]. Qualitative research is also less fixed than quantitative and is therefore better suited to exploratory research as this enables investigation of novel concepts and fluidity of research plans to adapt for unexpected findings[320]. Although qualitative methods are ideally suited to this study, there are limitations with this approach such as the logistical need to restrict sample sizes. Quantitative research methods, such as surveys, allow access to greater numbers of participants in a similar time frame however qualitative research methods allow the researcher to explore participant answers in greater depth.

This study relied on semi-structured individual or small group interviews with older adults and group interviews with younger adults (operationalised as university students). The use of interviews (both individual and group) was chosen over other methods, such as surveys, as interviews enable participant responses to be explored in greater depth.[321] A semi-structured interview approach was selected as it allows for a clear and consistent list of questions to be asked however also

[318]Bowling, *Research Methods in Health: Investigating Health and Health Services*., 364
[319] Bryman, "The Debate about Quantitative and Qualitative Research: A Question of Method or Epistemology?"
[320] Bryman.
[321] Gray, *Doing Research in the Real World*., 370

provides a degree of flexibility depending on participant response.[322] Group interviews were conducted with the younger adults, and individual or small group interviews were conducted with the older adult participants. Given the potential for minor physical impairment among older adults (in particular hearing loss), older adult small group interviews were limited to include fewer participants per group. These sessions provided an opportunity to examine the awareness of pandemic influenza, perceptions of risk and vulnerability and willingness to engage in protective behaviours amongst younger and older adults. Small group interviews were used because they provide a dynamic environment in which participants can interact thereby helping to tease out responses within a group for whom emergency preparedness, in particularly pandemic influenza, is unlikely to be a focus. For these reasons, small group interviews with the older adult participants were prioritized, however, individual interviews were also offered as an option to older adults if they preferred. Although most older adult participants were comfortable with a small group interview, several interviews were conducted as individual interviews due to logistical (scheduling and geographic distance) reasons. Whilst students were expected to attend a pre-arranged session held on the King's University campus, older adult participants were given the option of either attending an interview at King's or one to be held in a location more convenient to them.

The data from each stage of the research were independently analysed with the results compared to better understand the perceptions of risk, willingness to engage in protective behaviours and communication needs of potentially at-risk populations. This allowed for an examination of the needs and intentions of different risk groups, particularly in a situation that may feature an atypical profile of risk, as well as a comparison of planning assumptions and population expectations during an influenza pandemic.

[322] Denscombe, *The Good Research Guide*.,175

5.3 Study Participants

Older and younger adults were selected as they traditionally occupy very different risk profiles that may be affected depending on the strain and severity of a future pandemic. Older adults are traditionally classed as at risk because of increased medical susceptibility and potential vulnerability but they may also possess greater resilience to pandemic risks than is often assumed (see Section 3, Chapter 1 for full details). Younger adults are not usually viewed as at-risk or vulnerable but, in the event of an influenza pandemic, they may find themselves in that position depending on the strain of the virus and because of lifestyle factors (see Section 3, Chapter 1 for full details).

As this study is examining two specific population groups, purposive sampling was used in order to obtain a sufficient range of views of the population groups being studied rather than a representative sample of the population at large.[323] This allowed for the inclusion of participants with experience in the area being investigated; namely older adults and students.[324] In recruiting participants, this study aimed to target gender variety, ethnicity and socio-economic variables to maximise variation in response, but the priority was age and residential status so additional factors were not controlled.

All study participants (professionals, older adults and younger adults) were drawn from the Greater London area; defined as inside the M25. With a population of over 8.5 million and a population density of 5,491 people per square kilometre[325] vs the UK average of 266.6 per sq km[326], an influenza pandemic in London has no shortage of opportunities to spread. London is also an extremely diverse city with representation from a wide variety of cultures and ethnicities.[327] Furthermore, the approximately 30 million journeys per day on the TfL network[328] provide further opportunity for disease transmission.

[323] Luborsky and Rubinstein, "Sampling in Qualitative Reserach."
[324] United Lincolnshire Hospitals, "Qualitative Research Terms."
[325] Smith, "London's Population High: Top Metropolis Facts."
[326] The World Bank, "World Development Indicators: United Kingdom."
[327] Horton, "This Map Perfectly Displays the Diversity of London."
[328] Transport for London, "Annual Report and Statement of Accounts 2013/2014."

Older adult participants were required to be over 70 years of age. Although age 65 is the current UK state pension age for men and, as of April 2015, for women as well[329], it was felt that the inclusion of individuals between 65 and 70 years of age could produce results less indicative of older adult experiences as this population group would likely only recently have joined the ranks of 'senior citizens'. Participants were also required to be resident not only in the UK, but specifically in London. This restriction was designed to exclude individuals who may have experienced different public health communication and national norms while still providing the opportunity to explore different UK cultural norms. Older adult participants were further limited to individuals not experiencing cognitive impairment as these individuals may be receiving some form of medical and social care support, and decisions regarding their healthcare may be made in a different way, and the additional challenge of conducting this research with cognitively impaired individuals was out of the scope of the current study.

Younger adult participants were required to be between 18-25 years of age and enrolled in a full-time university program in London. This age range was selected to ensure a group of individuals who are both within the at-risk population sector for several pandemic strains (such as the recent H1N1) and who are in the process of adapting to adulthood (and less likely to be married with children, working full-time permanent jobs). Whilst recognizing that not all 18-25 years olds are university students, limiting participants to this sector allowed for the ability to compare population perceptions and needs with existing pandemic planning at an institutional (university) level. Further, many students live in close quarters, particularly in halls of residences and are at increased risk of disease transmission. This study initially intended to exclude EU and international students as their experience with public health communication and cultural norms may differ from the UK however, initial practitioner interviews with university administrators indicated that different linguistic or cultural experiences, as well as institutional

[329] Age UK, "Changes to State Pension Age."

challenges around international students affect pandemic planning and preparedness. In addition, non-UK students represent a sizeable proportion of many universities. King's College London, for example, has thousands of international students, representing 150 countries.[330] It was therefore determined that, to exclude this population would represent a shortcoming of the study.

While outwardly very different, these two population groups share a number of important commonalities. First and foremost, neither is likely to be a primary carer for young or school-aged children and thus is less likely to receive public health information through school messaging. Neither category is likely to be in the full-time workforce but may still have obligations such as university classes or doctor's appointments that an individual would be unwilling or unable to miss and which could affect the ability to engage in social isolation practices if ill.

In the first phase of the research, thirteen younger adult group interviews of between three and seven participants were conducted, with a total of 51 participants (See Appendix C). Nineteen older adult interviews were conducted, with a total of 36 participants (See Appendix D). Interviews, with one exception, had between one and four participants. One group interview had six participants as previously confirmed participants brought spouses or neighbours to participate. This interview took place in a residential retirement community and participants were previously acquainted with one another and keen to go ahead with the research, despite the larger group.

A total of 24 interviews were conducted (12 with the standard leaflet and 12 with the enhanced leaflet) in the second phase of the research (See Appendix E). Interviews had between one and four participants. A total of 40 participants participated in the study with 21 receiving the standard leaflet and 19 the enhanced leaflet.

[330] King's College London, "King's by Numbers"; King's College London, "Your Region."

5.3.1 Recruitment of Participants

Study participants were recruited through several routes; though the primary means, for both younger and older adult groups was through gatekeepers. Several avenues were attempted to recruit younger adults, including putting up recruitment posters at universities, using the online research recruitment portal 'Call For Participants', university research recruitment forums (such as the KCL 'Fortnightly Circular: Research Volunteer Recruitment'), and word of mouth. Recruitment posters were, by far, the most time consuming and least effective means of recruitment. Particularly given that many universities are now employing stricter access policies for security reasons, gaining access to the university premises was not always straightforward. Additionally, some universities will not allow advertising of research if it is external to the university; leaving paid-for advertising as the only option to reach their student population. Call for Participants and word of mouth were both somewhat more successful in recruiting participants though responses were still limited. The most effective recruitment process, by far, was the use of university research recruitment forums. Whilst it could be challenging to track down the appropriate contact, where successful, the results were overwhelming and, through this means, the majority of participants were recruited.

Similarly, although a minority of older adult participants were recruited through professional or personal contacts (ie: a former co-workers' grandparents), participants in this category were primarily recruited through organizational gatekeepers such as older adult program providers (e.g. local AgeUK groups or library clubs), residential communities, and community groups (such as churches). Once the project had been explained, these individuals were generally willing to circulate a notice of the research among their membership and, in two cases, provided the opportunity to speak directly to the membership to facilitate recruitment.

5.4 Materials and Procedure

5.4.1 Scenario

The decision to use a scenario to illustrate a pandemic experience was taken early on in the study design. The use of a scenario has been demonstrated to be an effective tool in research examining 'future uncertainties'.[331] The final decision, however, to include a scenario in the research was the result of two Public and Patient Involvement (PPI) sessions with participants from the University of the Third Age and Age UK. These sessions were held to discuss the research project and seek expert input and guidance. The questions posed to PPI participants centred around two main themes: whether pandemic influenza might be upsetting to older adults to discuss and research design. Memories and experiences of pandemic influenza varied greatly among participants however participants were unequivocal in their belief that discussing pandemic influenza would not be likely to cause upset to older adults. On the question of the usefulness of a scenario in prompting discussion of pandemic influenza, participants were agreed that a scenario would greatly assist the discussion. PPI sessions were beneficial to the research and influenced the research design not only through the inclusion of a scenario for the interviews but also by confirming that the planned approach was appropriate and likely to result in effective research and, by extension, useful policy impact. Furthermore, these workshops provided an invaluable opportunity to better understand older adults' perceptions of risk, vulnerability and pandemic influenza ahead of the development of research materials.

The development of the scenario itself created a challenge in determining not only the timing of the scenario but also the severity. Pandemic influenza represents a serious risk to public health.[332] It is therefore tempting to base the conditions of the scenario on more extreme instances, such as the 1918 Spanish Flu, to ensure the potential severity of a pandemic is adequately conveyed to participants. This however, does a disservice, both to participants and also to the research. First and foremost, this assumes that participants lack the mental capacity to understand

[331] Chermak, "Studying Scenario Planning: Theory, Research Suggestions, and Hypotheses."
[332] UK Cabinet Office, "National Risk Register of Civil Emergencies."

and interpret more subtle indications of severity which, if true, would be highly problematic for government in communicating during extreme events. Additionally, by participating in the study, participants are not only given the opportunity to contribute to improving risk and crisis communications with the intent of improving health outcomes in the event of an influenza pandemic but also to reflect on, and perhaps improve, their personal influenza preparedness planning. This should not include attempts to scare or to distress participants with an apocalyptic outcome. This type of approach is also damaging to the research itself as it risks providing less accurate information regarding risk perception and behavioural intentions. Worst-case scenarios can upset the balance of interpretation and intent with emotional overwhelming rational.[333]

The 2009 pandemic provides an appropriate basis on which to develop a future pandemic scenario. The Swine flu experience is reflective of a more globalised world as well as demonstrative of technological and communication advances than previous pandemics, for example, the ability to develop a targeted vaccine in a matter of months and the role of non-traditional communications such web-based information and social media. Whilst less severe than initially feared, H1N1 resulted not only in increased morbidity and mortality but also in vast amounts of resources to manage.[334] For this research, the pandemic scenario was based on the Canadian experience of H1N1 (Swine Flu) in 2009. The Canadian experience of H1N1 is relevant for three primary reasons. First and foremost, as Canada was positioned on the front-lines, geographically speaking, of the emerging pandemic, the full force of uncertainty around the virus, in particular severity and virulence, during the initial outbreak was felt.[335] Further, the Canadian experience of SARS in 2003 prompted a review of the public health response and, subsequently, improvements, such as increased surveillance, were made to public health emergency planning. These, in turn, facilitated and improved the Canadian

[333] Evans, "Nightmare Scenario: The Fallacy of Worst-Case Thinking."
[334] US Centers for Disease Control and Prevention, "First Global Estimates of 2009 H1N1 Pandemic Mortality Released by CDC-Led Collaboration."and author's experience as an advisor to the Canadian Minister of Health during the H1N1 pandemic**.**
[335] Author's experience as an advisor to the Canadian Minister of Health during the H1N1 pandemic.

pandemic response.[336] Equally, the UK experience of the 2009 pandemic prompted a lessons learned review and the enactment of recommendations for improving public health response capability.[337]

The scenario in the first phase was situated at the start of a pandemic. Participants were provided a news article describing an emerging outbreak of a new strain of flu in Greece. At this stage, there were no confirmed UK cases but the government considered instituting a travel ban. After discussing their perceptions of risk and likely responses, participants were provided a second news article. In this second article, it is now six weeks later and the WHO has declared a pandemic (see Appendix F for scenario materials).

The second phase of the scenario took place approximately four months after the first and was structured around vaccination. In this scenario, the vaccine has now been developed and is about to be made available in the UK. This part of the scenario consisted of three injects taking place over the course of a week. The first scenario inject provided the background to the pandemic situation and explained that a vaccine would shortly be made available, though priority would be given to at-risk groups. The second scenario inject provided to participants was an 'official' leaflet providing information on the vaccination, including listing the at-risk groups. The final scenario inject was a news story around an older women being turned away from a vaccination clinic as she was not considered at-risk. (see Appendix G for scenario materials).

5.4.2 Procedure

Participants were provided with an information sheet detailing the study as well as a consent form and were required to complete this before being able to participate in the research. Prior to the start of the interview, all participants were asked to fill

[336] Public Health Agency of Canada, "Lessons Learned Review: Public Health Agency of Canada and Health Canada Response to the 2009 H1N1 Pandemic."
[337] Hine, "The 2009 Influenza Pandemic: An Independent Review of the UK Response to the 2009 Influenza Pandemic."

out a questionnaire in order to provide general information on demographics, health, and information-seeking habits (see Appendix H).

Participants in the first phase of the research were asked to discuss their knowledge and understanding of pandemic influenza and of associated risks (e.g. how to define it, who is vulnerable), as well as their willingness and intent to engage in protective behaviours (such as increased hand washing, proper disposal of used tissues and vaccination). They were also asked to discuss what information they would need during a pandemic, who they would trust to deliver this information and what types of mass media communication they utilise. Furthermore, they were asked to think about what challenges they might encounter in a pandemic; not only barriers to adopting protective behaviours but also logistical challenges such as grocery shopping or collecting medicine (see Appendix I for Phase One interview schedules).

In the second phase of the research, participants were again asked to discuss their knowledge of pandemic flu, perceptions of risk, and communication needs. Behavioural intentions were discussed though the focus was on vaccination. The timeline of the scenario had shifted several months into the future, a pandemic was fully underway and a vaccine had been developed. Participants were provided with three scenario injects and, at each stage of the scenario, were asked to reply to a short questionnaire (see Appendix J for scenario questionnaires).

For the first scenario inject at phase 2, participants were given a news article outlining the pandemic and indicating a vaccine would shortly be made available. They were then asked about their perception of risk and behavioural intentions, particularly their intention to vaccinate. The second scenario inject provided to participants was an 'official' leaflet providing information on the vaccination, including listing the at-risk groups.

As pandemic influenza often affects the younger adult population, older adults were not included in the priority group but younger adults were. Two versions of

the leaflet were developed, one with the standard wording and one with additional information explaining why older adults were not included. This facilitated testing whether how a traditionally at-risk group would respond to a pandemic scenario with an atypical profile of risk as well as the effect that additional explanatory information would have on their perceptions and behaviour.

Participants were again asked to discuss their perception of risk, intentions to vaccinate and information needs. Finally, participants were given a news article in which an older adult had been turned away from a vaccination clinic due to not being a member of a priority group. Participants were then asked to provide their reaction to the article and also whether they would get vaccinated once the vaccine was made available to them (see Appendix K for Phase two interview schedule).

5.5 Data Analysis

The individual and group interviews were recorded and then fully transcribed before being coded using computer assisted qualitative data analysis software (CAQDAS), in this case NVivo. NVivo was selected as it was recommended by other researchers who had used it and found it to be a helpful tool. Computer assisted coding software facilitates the organization and analysis of qualitative data. Researchers can use these programs to store, index and retrieve coded data.[338]

To analyse the transcripts, this study used thematic analysis. Thematic analysis is 'a method for identifying, analysing and reporting patterns (themes) within data'.[339] Although thematic analysis often employs a systematic coding approach, it also allows for a degree of flexibility or fluidity in the identification of themes which is not as prevalent in other analytical approaches.[340] Unlike many other forms of analysis, thematic analysis is not tied to a particular theoretical perspective[341] which, in a cross-disciplinary study such as this, that incorporates elements from the fields of health psychology, risk management and security studies, allows for

[338] Denscombe, *The Good Research Guide*., 278
[339] Braun and Clarke, "Using Thematic Analysis in Psychology."
[340] Braun and Clarke, "Reflecting on Reflexive Thematic Analysis."
[341] Braun and Clarke, "Using Thematic Analysis in Psychology."

greater flexibility in examining the topic at hand. It should be noted however, that this flexibility does not absolve a researcher of the responsibility to situate the research within a theoretical framework.

Within the rubric of thematic analysis are several approaches to addressing data. These include reflexive thematic analysis, framework analysis, and template analysis.[342] These latter two have been characterised by Braun and Clarke as 'codebook thematic analysis' as they utilize a more structured approach to coding whilst still maintaining an organic approach to analysis.[343] Template analysis involves the development of a well-structured analytical framework which maintains the flexibility to adapt based on study needs and data results. A coding template will initially be developed, often a priori based on the study parameters. The data will then be preliminarily coded and, based on this, the template will be adapted or refined. Once the template is finalised, it is then applied to the data.[344] The design of this research necessitated both inductive and deductive coding as it did not adopt a completed grounded approach but rather a theoretical framework based on PMT and COM-B that was to be tested. Additionally, given the exploratory nature of this research incorporating multiple populations and datasets, the flexibly structured approach of template analysis was considered to be beneficial as it would allow for the development of themes within the data whilst providing a framework to keep the research focused. The successful application of template analysis to the data formats used in this study provided added impetus to employ this particular thematic analysis variant.

The coding framework for this research was based on theoretical concepts from PMT and COM-B and was structured around the three main themes of this research: risk, behaviour, and communication. In developing the framework, a priori themes representing the central pillars of the research were identified. As the initial data results were analysed, modifications to these pillars, largely through

[342] Braun and Clarke, "Reflecting on Reflexive Thematic Analysis."
[343] Braun and Clarke.
[344] Brooks et al., "The Utility of Template Analysis in Qualitative Psychology Research"; Brooks and King, "Qualitative Psychology in the Real World: The Utility of Template Analysis."

the development of sub-sets within the key themes, were made. The re-iterative nature of template analysis meant that, although themes related to the central pillars of the research were identified a priori (i.e.: risk), these were modified after the initial coding. For example, the initial theme of risk was, after the initial review, sub-divided to better reflect the variances in perceptions of risk.

Consequently, in the coding framework for this research (see Figure 5.1), risk was coded both as a general concept (ie: defining risk vs vulnerability, and general perceptions of risk in a pandemic), as well as a specific response to each stage of the scenario. Additionally, perceptions or assumptions around at-risk groups were also specifically coded for. Behavioural intentions were coded thematically according to the five specific behaviours being examined (handwashing, isolation, respiratory hygiene, seeking medical assistance, and vaccination) and each of these, in turn, were broken down based on the principles of PMT and COM-B (ie: self-efficacy, behaviour efficacy, capability, opportunity, motivation). Although the initial framework provided separate coding for each behaviour being examined, the final framework was modified to incorporate sub-sets for each behavioural 'influencer' which allowed the data to be clearly analysed not only across behaviours but also across barriers or enablers to action. Communication characteristics were assessed both in terms of information needs and behaviours in response to scenario stages, as well in more general terms. In addition to communication needs vis-à-vis content, communication topics examined included trusted sources of information, and preferred communication methods.

In the second phase of the research the coding framework was slightly altered to incorporate the testing of the communication intervention (see Figure 5.2). In addition to the above, the framework also considered participant responses to three scenario-driven elements: concerns over vaccine availability, confidence in authorities' approach to vaccine prioritization, and acceptability of refusal of vaccine to non-priority individuals.

Figure 5-1 Coding Framework-Phase One

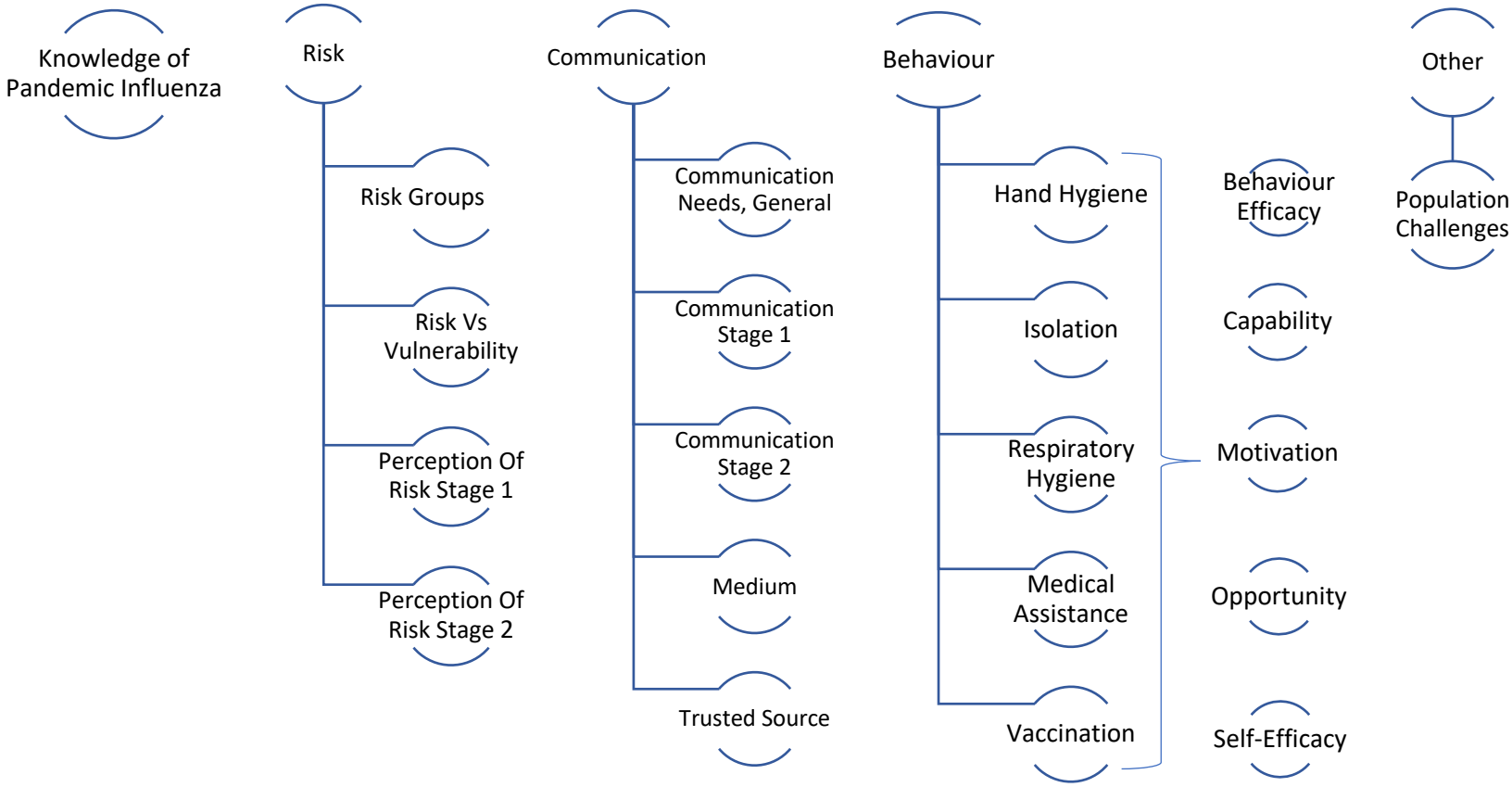
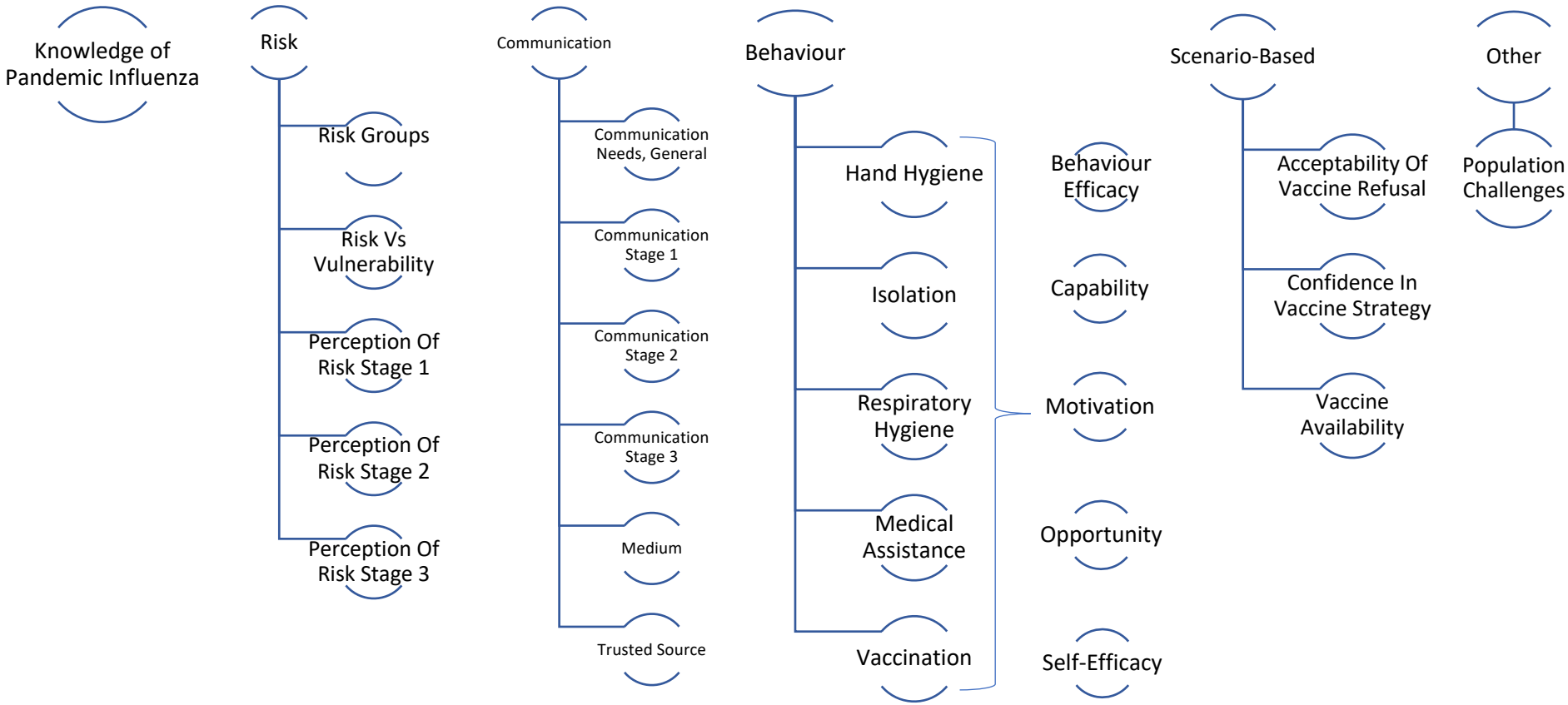


Figure 5-2 Coding Framework-Phase Two



5.6 Research Ethics

Ethical approval was obtained from King's College London for all components of the study that involved collecting data from human participants. Approval for the interviews with practitioners and students was applied for and approved (LRS-14/15-1667) in 2015. Ethical approval for the interviews with older adults required a high-risk application as older adults are considered a potentially vulnerable population group. This application was successful and was approved in 2016 (HR-16/17-2718).

In addition to the standard ethical considerations when conducting research with human participants outlined above, research on topics such as pandemic influenza that have the potential to be distressing for the participants. In this case, however, the risk was considered to be unlikely. Even for people who have directly witnessed traumatic events, participating in research that asks about those events has been shown to have little negative impact. Two studies in particular have assessed whether participating in research about traumatic events caused anxiety for participants randomly selected from the general population. In the first, less than 2% of residents of New York who were interviewed by telephone about their experiences during the 9/11 terrorist attack reported that this had left them feeling 'emotionally upset.'[345] The second, much larger, study of 5,774 US citizens found that less than 1% were emotionally upset at the end of a survey concerning 9/11[346],[347]. In order to further reduce risk, participants were fully informed prior to participating that the study involves a discussion of and a scenario involving pandemic influenza. They were also advised that participation is strictly voluntary and they can withdraw from the interview at any time should they become distressed. In addition, participants were provided with the information sheet in

[345] Boscarino et al., "Adverse Reactions Associated With Studying Persons Recently Exposed to Mass Urban Disaster."
[346] Galea et al., "Participant Reactions to Survey Research in the General Population after Terrorist Attacks."
[347] Boscarino et al., "Adverse Reactions Associated With Studying Persons Recently Exposed to Mass Urban Disaster"; Galea et al., "Participant Reactions to Survey Research in the General Population after Terrorist Attacks."

advance of their participation and data collection only proceeded after participants confirmed they had read and understood the information sheet and had signed consent forms. Further, given the use of news articles as scenario injects, throughout the interviews, it was repeatedly stated that these were created for the research and were not legitimate news articles. Furthermore, inflammatory language and worst-case scenarios were avoided, as outlined in Section 1.4.

5.6.1 Older Adults as High Risk

Older adults have been identified as a potentially vulnerable population group due to the fact that physical and cognitive decline is often associated with aging. This was mitigated by strict inclusion criteria and individuals with evident cognitive impairments were not included in this study. Furthermore, Patient and Public Involvement (PPI) practices were used in order to ensure that research focus and processes were suitable for use with this age group.

Information leaflets, consent forms and other documentation used appropriate font size. Additionally, there is increasing awareness that many older adults do not necessarily consider themselves to be 'old'[348]. As such, this study avoided using potentially offensive terms such as 'elderly' and instead used 'older adult(s)' or 'older person(s)' to refer to participants.

Participation was to be limited to individuals not suffering from evident cognitive impairment. Determining who might or might not fall into this category, particularly without requiring access to personal medical information, was a challenge. To assist in this determination, liaison with an Engagement and Participation Officer at the Alzheimer's Society was sought and who advised that:

> 'not everyone with cognitive impairment or dementia will have a recognised diagnosis and/or they may not have insight into any difficulties they may experience. The nature of dementia is also that there are some people who live with a diagnosis and would be able to participate in your focus groups. In other words, they could independently attend your group and participate in the discussions and you would be none the wiser unless they told you.'

[348] Demakakos, Gjonca, and Nazroo, "Age Identity, Age Perceptions, and Health."

For the reasons above, individuals with cognitive impairments or dementia were not specifically excluded but rather, the eligibility criteria on the information sheet required participants to be able to read and understand the information sheet, consent for themselves, independently attend the small group or individual interview and participate in discussions. Individuals who were able to engage with these recruitment steps were therefore deemed eligible to participate in the studies.

5.7 Methodological Challenges

Conducting research with an older adult population, particularly in contrast to the younger adult population, highlighted some specific challenges. Although cognitively impaired older adults were not knowingly included in the study, some potential impediments emerged around the use of a realistic scenario. Participants were told at the beginning that the scenario was entirely fictional and the documents indicated they were for research purposes only. Despite this, in a few cases, it was clear from comments made that a few older adult participants had not grasped that the scenario was not real and had to be reminded of this, in some cases several times.

There was also a challenge in confronting researcher bias in the second phase of the research. The leaflet provided in this phase had two versions; one with additional explanatory information and one with basic listing of priority groups for vaccination. When conducting an interview with a participant who, by virtue of factors such as age or gender, prompted an instinctive sense of protectiveness (often by reminding the researcher of her own older family members), there was an instinctive inclination to provide them with the more explanatory leaflet. This inclination was suppressed, but was a challenge not present with research conducted in the student population.

Coordinating logistics with this population group was also more challenging than with students as they tended to be less technologically active. This meant that, often, if a participant was running late or was having difficulty finding their way to

the venue for the interview, they had no way to contact me as they were not in possession of a mobile phone. Although some older adult participants were delayed, they were, on the whole, a very reliable population group with which to conduct research. In contrast, the university students were much less consistent with last minute cancellations and no-shows being a regular feature of the recruitment process. This contributed to the variance in interview group sizes and accounted for drop-outs. Interviews began to be scheduled with full capacity wherever possible and, in some cases, some of the larger groups occurred when all registered participants appeared.

5.8 Chapter Summary

This chapter examined the methods involved in the development, execution, and analysis of the older and younger adult interviews. The study consisted of two-phase, scenario-based research examining risk perception, behavioural intentions, and communication needs of two population groups with different profiles of risk. Chapters 6-8 will present the results of this research. A detailed discussion of the outcomes and implications of the research is presented in Chapter 9.

6 Chapter VI: Perceptions of risk and behavioural responses amongst older adults in the face of an outbreak of pandemic influenza

6.1 Chapter Overview

The results of the first set of interviews with older adults (>70 years of age) are presented in this chapter. These interviews were conducted in order to gain a better understanding of older adult perceptions and behavioural intentions with regard to a possible influenza pandemic. Additionally, these interviews were designed to identify potential areas where improved communication would promote behaviour change to produce better health outcomes for older adults.

6.2 Knowledge and Understanding of Pandemic Influenza

When asked about their impressions of 'pandemic influenza', participants identified several key themes: historical points of reference, geographic spread, the number of individuals involved or affected, and the nature and nomenclature of a pandemic.

Participants frequently referenced previous cases, or perceived cases, of pandemic, including Spanish flu, Avian flu, Ebola, and Plague.

> Historically Spanish flu in 1917 which killed more people, I gather, than the disaster of the First World War. And it affects continents not just countries, that's how I see it. (Interview 4, Participant 3)

> Oh I think of the plague. (Interview 6, Participant 1)

For a few participants, their use of the Spanish flu as a point of reference was influenced by personal connections.

> It reminds me of the flu that killed my grandfather in 1919, after the First World War, which I think killed more people, I think, than died in the War? (Interview 8, Participant 1)

> He came home on leave, he'd got Spanish flu and that was it. I never met him of course but. (Interview 10, Participant 3 [in reference to an uncle])

Some participants additionally referenced the pandemics of the mid-20th century; 'Asian flu' (1957) and 'Hong Kong flu' (1968) though not necessarily with the correct timelines.

> I mean there was Asian flu back in … I got flu then, I can remember I was pretty poorly with it, but it was in the seventies I would think, or sixties was it? It was a long time ago. (Interview 3, Participant 2)

> I've had Asian flu, I was quite young but I do remember passing out at assembly. And I was trying to work out when it was, but it was a long time ago, 1988! (Interview 12, Participant 1)

Several participants correctly identified pandemic as being geographically widespread.

> 'Well Pandemic means it's everywhere, presumably. From Greek. … …There's no escape from its presence, certainly, whether you catch it or not's another thing, but certainly will be everywhere. You can't travel across to Ireland or something to escape it. It is international, a pandemic. (Interview 3, Participant 1)

> I think it means pretty enormous, pretty wide covering pandemic, that's what I think of first. (Interview 5, Participant 1)

Within the theme of geographic spread however, there was some confusion regarding the difference between a 'pandemic' and an 'epidemic' both in terms of definition as well as perceived risk.

> Yes, it's a new word this pandemic, isn't it? It's like a new word, isn't it? (Interview 12, Participant 5)

> If I'm honest, and I like to think I keep myself up to date, but if I'm honest it [epidemic] would get my attention more. Pandemic would be slightly dismissive I think. (Interview 12, Participant 1)

The consideration of geographic spread and the etymology of 'pandemic' vs 'epidemic' was effectively dismissed for some participants who either incorrectly identified geographic limitations for a pandemic or felt that the global nature of such an occurrence was largely irrelevant to them.

> I would have thought it'd mean just in this country now, not for other countries, no. (Interview 1, Participant 1)

> I mean until probably around 1980 there used to be regular sort of flu epidemics and I suppose I never really thought whether they came from other countries or whether universal, you just focussed on your own situations. (Interview 4, Participant 1)

The zoonotic origins and naming protocols of more recent publicized flu strains (Swine flu, Avian flu) also resulted in some confusion as to human transmissibility and susceptibility.

> So that was swine flu you're talking about in 2009 so it's not necessarily human, things that affect humans directly? (Interview 3, Participant 2)

> But swine flu, you can imagine it would really only get caught by swine but it was more widespread than that, wasn't it? (Interview 9, Participant 2)

Several participants also felt that a pandemic would be distinguished by a significant number of people infected and the extent that public services would be severely affected.

> 'Mass illness. Mass deaths. Hospitals being…well, doctors being inundated and hospitals not being able to cope. And it's not a very pleasant picture.' (Interview 2, Participant 1)

> Seems to give me the feeling that hospitals would be closed because they would be so packed out with people, and everybody would be walking round wearing masks. I think there would be some state of high alert across the country, that perhaps public places would be closed. And it's quite frightening. (Interview 2, Participant 2)

Pandemic as involving a new strain of influenza, distinct from seasonal flu was not commonly referenced but did come up in one interview.

> I was just thinking of a new… if I mentioned new virus, I was thinking of like a mutation or something, so that it could be a virus we already know of but coming in a different form? (Interview 5, Participant 2)

Participants did, however, note a distinction between the flu, as a general concept, not specific to seasonal or pandemic, and other illnesses, in particular, colds and a tendency for 'people' to either conflate the two or to confuse flu with other illnesses.

> Actually, you're saying, 'The flu and a cold, what's the difference?' Personally, I feel there is quite a big difference, and I think they've merged together as being one because people with bad colds are convinced they've got the flu. And, personally, I don't think they're the same. I think it's like, 'What have you done, broken your fingernail or broken your finger? (Interview 1, Participant 2)

> Right, cause obviously when somebody gets a bad cold they always say, 'Oh, I've got the flu.' People's misconception, including me. I'm actually ignorant of what flu is. (Interview 2, Participant 1)

Additionally, several participants identified that antibiotics would not be of use with the flu.

> And I think a lot of people muddle one with the other. Like this, 'Let's go back to the doctor for antibiotics.' You go, 'Not if you've got the flu.' (Interview 1, Participant 2)

> My first response is since 1918 we've developed a whole range of antibiotics, so if it's that kind of virus then … although antibiotics aren't much good with viruses, are they? (Interview 5, Participant 2)

Some modern conveniences were seen as potentially detrimental to flu prevention, with the London underground and central heating and air conditioning being among the factors perceived to contribute to potential future illness.

> In which case, the fact that we're all on the underground and we've all got central heating and we've all got air conditioning…one person sneezes on the ground floor and the people on the 14th floor get their share, through the air conditioner.' (Interview 1, Participant 2)

> But again I go back to when we were young, we never had any heating, we never had any colds. (Interview 7, Participant 3)

6.3 Baseline Perceptions of Risk

6.3.1 The Lexicon of 'Risk' and 'Vulnerability'

Whilst several participants considered the terms 'risk' and 'vulnerability' to be interchangeable, many participants felt that whilst linked these terms could be distinguished.

> I think they might be two halves of the same coin. The more vulnerable people are at the greater risk. (Interview 1, Participant 2)

> To me, vulnerable is a more serious condition than being at risk. It implies that there's just a few more factors for example coming in to play that would make you particularly more at risk, well more risk, vulnerable than people who were just at risk. So you could say for example anybody over 70's at risk. Well, OK … but if you said, 'You've got a vulnerability …' Let's say I suffered badly from lung problems, something like that, I think I would be more vulnerable. (Interview 13, Participant 1)

Vulnerability, as opposed to risk, was also connected to a sense of helplessness or of being in a situation or position that makes one less able to manage it.

> I may be totally wrong … to a certain degree you could identify an at risk group. … I think I know what I want to say but I … it's not coming out very well … they became vulnerable because of the position, the circumstances they found themselves in. (Interview 5, Participant 1)

> Yes, I suppose vulnerability, I think as you get older you realise you are more vulnerable to these things and also I think you realise that potentially you may not be able to cope as well with them as when you were younger. (Interview 4, Participant 2)

A few participants questioned the prevailing assumption around vulnerability and older adults.

> They need more help all round, because let's say already they're vulnerable because they have a lot of medical issues, they need more help because probably they have a lot of psychological issues. Because some people medically are fit and well, but honestly, they don't want to leave their home because they don't have friends, they don't get on with their neighbours, or they don't go out, so they don't even know who their neighbours are. So being vulnerable comes in different ways. (Interview 6, Participant 1)

> Unfortunately it's a word that's used and bounced about I think perhaps a little bit too much these days. … Everybody's vulnerable, a child is vulnerable, a teenager's vulnerable, thirty-year-olds are vulnerable, we're all vulnerable from different things that happen around us and our lifestyles, especially these days when there's so much around that you can buy, pick up, use, be given and stuff, in terms of drugs and alcohol and all that, so I think vulnerable is overused really. I think we need to find some other way of getting people's attention really, rather than vulnerable because, as you said, we're all suddenly vulnerable the minute you hit 50. (Interview 12, Participant 4)

6.3.2 At-Risk Groups

Participants identified four categories of group they considered to be 'at risk': the immunocompromised, those affected by lifestyle or occupational factors, those at risk due to socio-economic conditions and, atypical or broader populations. By far, the most commonly identified group believed to be at risk or vulnerable fell into the immunocompromised category. This included individuals with existing medical conditions that compromised their immune systems.

> If you're already on cancer treatment and you've got very little immunity, that actually could be not three weeks in bed; that could be a death sentence (Interview 1, Participant 2)

> And people that have got respiratory problems. (Interview 2, Participant 2)

Older adults were included in this category as a result of age-related reduction in immunity.

> But I would've thought age would… the older you are I thought, in as much as your general resistance to your health declines, I would've thought older people would be… more vulnerable. (Interview 9, Participant 2)

> And I think older people, we are more vulnerable, your immune system as you get older isn't as good as when you're young, is it? (Interview 11, Participant 4)

Infants and children were also included as a risk group, largely on the grounds that their immune systems are not yet fully developed.

> …obviously children and young babies would be at risk because they haven't built up any inbuilt resistance to that. (Interview 13, Participant 1)

> Maybe older age-group and the younger, both ends, both extremes. Anybody who's got any … any compromised health. (Interview 5, Participant 2)

In addition to potentially being compromised as a result of having less robust immune systems, one participant also highlighted that groups such as children and older adults are increasingly vulnerable due to their dependence on others.

> Why? Well, because influenza can lead onto other things if you're not careful about it and I think if you particularly are old and frail one thing leads to another I'm afraid. Young babies simply because they don't have a number of things you can build up in terms of resistance, they just don't have life experiences, so they're very, very dependent on obviously others to help out, and in a sense both of those people, they are … well they are both people, I think they're groups that are more dependent on others. (Interview 13, Participant 1)

Conversely, one participant also identified the potential benefit to older adults of having been previously exposed and developed immunity.

> It's a funny question. I don't know why, but I think when you're at risk … it worries me, and probably should, but … I think perhaps older people … some older people anyway, who've had a lot of illnesses when they were young, might have a better immunity. I also think well older people maybe it doesn't matter so much, we've had our lives and … I don't know, the young ones are the worry I think. (Interview 5, Participant 1)

Lifestyle or occupational factors were also referenced as contributing to risk. Frequent or unavoidable exposure to germs was seen as a potential risk, such as for working-age people having to commute on public transit.

> I don't feel vulnerable because I'm, how can I put it, being retired now I'm not generally mixing with larger parts of the community like travelling on the tube or… (Interview 4, Participant 1)

> And also I find people who commute to work on trains, because on the transport you're standing there and you're breathing in and the way those trains and busses are packed, I think … it affects all ages really, you can't put an age on a child or an elderly person. I think it affects everybody. (Interview 11, Participant 1)

Diet and exercise were also brought up, both as risk factors as well as in relation to activities that could reduce the chance of becoming ill.

> People with poor diets. (Interview 3, Participant 1)

> Or one sided diets. Too much pork or too much sugar, overweight people, people who won't exercise in the fresh air, people who drive everywhere in cars or people who go to work on public transport every day with all the bugs floating around the vehicle, that could cause it as well. So nobody's really safe. (Interview 3, Participant 3)

Additionally, socio-economic conditions such as poverty were identified as a potential risk factors, often phrased in terms of vulnerability.

> Vulnerable people. Through poverty, through disabilities, through very tender or very elderly age or through unhygienic surroundings, as we had in a film yesterday. (Interview 3, Participant 3)

> And then there's the awful concept of social stratification, even in the older age group social class 1, 2 and 3 may be more vulnerable than social class 3 and 4. (Interview 4, Participant 3

Health care workers were also identified as a population that would have greater exposure to the virus but the effect this would have in terms of risk was not universally clear as participants indicated it would be both a greater risk but also result in immunity development.

> But also medical people who are going to come in touch, contact with it. (Interview 8, Participant 2)

> It's one way of becoming immune is if you're constantly exposed to it like some doctors and surgeons are. (Interview 3, Participant 3)

While perceptions of who is at-risk were generally in line with groups routinely listed in seasonal flu advisories, or those individuals more reliant on social programs, a few participants did recognise that during a pandemic there could be an atypical profile of risk.

> I think the basis is we don't know what we're talking about. If we're talking about Spanish flu, then that wiped millions out – of people that appeared to be quite healthy. (Interview 1, Participant 2)

> I've heard somewhere, but when things like this do happen, healthy people are more likely to catch it than people that have been previously ill and have been treated. (Interview 7, Participant 3)

Consequently, some participants felt that there wouldn't be divisions around at-risk groups as the entire population would be at risk.

> When you say, 'at risk', I think this would apply to the whole population. If you're talking about a flu pandemic, then 'at risk' would be the whole population, wouldn't it? (Interview 2, Participant 1)

> Everybody would be at risk. (Interview 7, Participant 1)

6.3.3 Challenges for Older Adults

In identifying aspects of an influenza pandemic that might prove particularly challenging for older adults, responses broadly clustered around the themes of coping challenges and communication challenges. Additionally, some participants expressed the view that, not only would there not be any challenges particular to older adults, but older adults would be as capable as the rest of the population in dealing with a pandemic.

> Yeah, and I think older people as well are a bit more fatalistic about it, they've gone through a lot in their lives and then there's a pandemic, well this is another problem to cope with but we're not gonna stop living a normal life, we're still coming over here to play golf and do that sort of thing. (Interview 4, Participant 2)

> Yes, because if you are elderly and you're reasonably fit, then you're just carrying on like everybody else, aren't you, aren't we? I mean there are things like… the fact that I don't bother with social media, but I know a lot of older people do because they like to keep in touch with their families that way. But apart from that I feel I'm fairly connected to the world and maybe… I'm not quite as strong or don't have quite the stamina that I used to have but I don't see that that would make much difference really. (Interview 5, Participant 2)

6.3.3.1 Coping Challenges

Participants frequently identified solitary living as a potential challenge for older adults.

> There must be a whole swathe of people who have little or nothing in the way of support, 'cause they live on their own. (Interview 1, Participant 2)

> If you've got a 80 odd year old lady living on her own, she's got flu, if nobody knows, she could be in there with no food and no nothing. (Interview 7, Participant 1)

When asked about the concept of "flu friends", most participants indicated the term was unfamiliar to them. However, whilst the lexicon may not be known, the idea behind 'flu friends' was quite familiar to participants and, in many cases, already in action with several participants indicating they were either already looking in on an older neighbor or were confident their friends and neighbour would be there to help in the event of a pandemic.

> Well, I think these instances of these people who need this kind of help are very few, you know, it's amazing the neighbourness that's still around in neighbours. I

> mean we did have a 90-year-old man living next door to us, his wife died and my wife and the lady opposite I know kept a constant eye on him. (Interview 9, Participant 1)

> Well I think most of us have families who ring us or friends, and I mean if they don't see you for a day they're knocking to see if you're alright or phoning you up, aren't they? (Interview 12, Participant 5)

While none of the participants directly identified that they would have difficulty in finding a 'flu friend', several did express a sense that societal changes could make this a more difficult prospect in general.

> As well, I mean, the population are… People are becoming more insular, in a way, when you're living hours and hours like that. They are, unfortunately. I'd say that people move so often that…especially with rented accommodation, they're in, maybe, for three or four months… … and then they moved on, they moved on. So you're never that close to your neighbours. (Interview 1, Participant 1)

> Yeah, people should make sure that old people are looked after by somebody, if not family. (Interview 7, Participant 1)
> Care in the community has completely gone now. (Interview 7, Participant 3
> It's gone. (Interview 7, Participant 2)
> Nobody cares anymore. (Interview 7, Participant 3)
> We don't have that like we used to have, I don't think. I mean a lot of people, they don't even know their next-door neighbour. (Interview 7, Participant 1)

Additionally, some participants felt that accessing food and care could prove challenging for some older adults.

> I'd be thinking it could be quite challenging because if people are frightened. We were saying about supermarkets, people could be trying to stockpile food and groceries of any sort. And I wouldn't like to be in the way of people trying to stockpile as they're rushing round the supermarkets and grabbing things. I think it could be rather nasty because some older people are able to still push people out the way, but others aren't. (Interview 2, Participant 2)

> Well, no, providing you're mobile and you can get to a doctor I don't think there's any problem, but if you're housebound I doubt whether there's the resources at your local GP surgery for someone to come out and give you a flu jab. (Interview 9, Participant 1)

6.3.3.2 Communication Challenges

Accessibility and comprehension of information were identified as communication challenges particular to older adults. The increase in societal and governmental reliance on technology for the acquisition and dissemination of information as well as the provision of services was seen to be potentially detrimental to older adults.

> But I suppose there's a lot of old people who don't even have internet access and

> so on, we're assuming that we can all have that communication, which is really, by far, the best sort of communication and also it can be reliable if it's from the Health Department. But I suppose with a lot of people who don't have access to computers are dependent on somebody actually physically knocking on their door and telling them what's what. (Interview 4, Participant 2)

> And a lot of people over eighty don't do ordering food online, including me. (Interview 8, Participant 1)

Older adults were also viewed by their peers as potentially having difficulty in understanding and acting on information provided, such as recommendations around what to do in the event of a pandemic.

> When you get older, it takes longer for things to sink in, unfortunately. And if people have been by themselves, they get out the habit of communication. (Interview 2, Participant 2)

> But you need to… not necessarily from a personal level but from a global UK level you would need to be aware of whether the rest of the age group was interpreting the facts properly and taking precautions.(Interview 4, Participant 3)

Whilst several of the perceived challenges identified by participants are not necessarily restricted to older adults, such as individuals living alone with little to no support, these may be more prevalent amongst the older adult population. Additionally, perceived challenges around access to information in an increasingly technological-reliant world, was a recurring theme with this age group.

6.4 Risk Perception in response to the Scenario

6.4.1 Stage One: On the Cusp of an Outbreak

In Stage One of the scenario, participants were shown a newspaper article reporting on an outbreak of influenza in Greece. Although it had yet to reach UK shores, or be declared a pandemic, the government was considering a travel ban due to the severity. Participant responses to the first stage of the scenario were not consistent. Some expressed concern for their future wellbeing whilst others indicated the outbreak in Greece wouldn't really resonate with them. Regardless of whether they were concerned or ambivalent about the perceived risk, participants were broadly in agreement on one matter: geography. The fact that the outbreak was not taking place in the UK meant that it was or could be perceived as less of a threat.

> I think you are inclined to think, 'Oh, it's happening out there. It's not happening here.' (Interview 11, Participant 4)
> It's not happening here so why worry about it.(Interview 11, Participant 2)
> Yeah, I think that's the general view.(Interview 11, Participant 1)

> I wouldn't really respond to this sort of article because I'd read it and it's like every other story you read, next week it'll be something else. And alright, it may be if I had a holiday planned to Greece I might consider it but living in London and there's little outbreak of flu in Greece I'd say really no, no it's not… I'd just read it and say, 'That's interesting', but until it got worse or until it was something else I wouldn't take any notice of it. (Interview 4, Participant 2)

In considering the geographical distance and its related effect on threat perceptions, several participants seemed not to take into account the nature and potential spread of influenza, with one participant comparing the situation to an earthquake.

> Turn to the next page. Not impressive really from my point of view. It's this part of the world it's happened. And I don't think I'd really think about it that much. Like an earthquake killing millions in China …(Interview 3, Participant 1)

> I would be thinking, 'I'm grateful for the English Channel.' (Interview 2, Participant 2)

The number of individuals suspected to be infected in the UK also influenced perceptions of risk.

> … but three people … now we have a population of about 64 million so statistically the chances of me touching any of those, or even if it was double that, is extremely remote. So I say look, I have much more chance of being knocked down by a number 19 bus as I do actually … 'cause they're the busses where I live, than this affecting me. (Interview 13, Participant 1)

> Oh no, if it was just three people I wouldn't even think about it. (Interview 12, Participant 4)

Many participants also communicated a high level of acceptance of risk.

> Yeah, I think it's when you get older you kind of… you've only got a few years left - you don't spend it worrying about things, do you? (Interview 4, Participant 2)
> Yeah, certainly. I was just thinking that… I mean tomorrow we're going to a fabulous concert and I don't think anything would prevent me from going into town for that. (Interview 4, Participant 1)

> Do you know what? Nobody is free of risk. I will see myself as being at risk, but being me, not my neighbour or my friend, I know that I will not panic. I know that even without an influenza or plague, or whatever, in the air, I take reasonable precautions anyway. It just means that for somebody like me, I will review the precautions I take and if I have to beef up some of them, I will, definitely. But I will

> not panic, because at the end of the day, life has to go on - that's me being positive - and they will need people who are fit and well and have taken good precautions for all hands to be on deck to help the others, so that… we cannot at the end of the day leave everything to the medical professionals. (Interview 6, Participant 1)

Some participants attributed their resilience to risk in relation to their wartime experiences.

> But all these disasters and all these panics, you slot it away as that's happening to someone else, that's not actually affecting me so you don't take any reaction, you don't do anything about it. (Interview 9, Participant 1)
> Like the war, oh that bomb's on somebody else, next one... (Interview 9, Participant 2)

> Not really because I mean we lived during the war, I mean there was bombs going off but we still went to dances and pictures (Interview 10, Participant 3)

6.4.2 Stage Two: Pandemic is Declared

In Stage Two of the scenario participants were given a second article to read which brought the pandemic scenario forward several weeks to a point where deaths had occurred in the UK and the WHO had declared a pandemic. Participants were then asked to comment on their reaction to it; whether they felt at risk and whether they would change anything in their day-to-day routine. Risk perceptions increased in the second half of the scenario though many of the themes from the first stage continued to be present.

Geography continued to play an important role in affecting participant perceptions of risk. Although the virus had now reached the UK, many participants expressed the view that the pandemic needed to be felt at a more local level to resonate.

> London is a very large place, and if it was in west London, I think I'd feel, 'We're OK; we're in east London. All right, maybe not such a big worry.' But if it turned out to be east London, Tower Hamlets, Newham, you'd think, 'Mm, it's getting a bit close.' (Interview 2, Participant 1)

> I think that would be my reaction, you know, what you've said in this particular article is raising the temperature, as it were, of the whole thing a bit compared with the previous article, isn't it, and that's the object no doubt? But it's still not… I mean if your next one says 12 people dropped dead in the street yesterday in Ealing Broadway, you know, then this is coming close to home. (Interview 9, Participant 2)

In concert with locality, the statistics of the outbreak vis-à-vis morbidity/mortality also affected perceptions of risk.

> The problem about all these numbers though is that I don't know and I don't think many people would know how many people die every day in this country anyway and it's very hard to do the calculation out of 60 million of… it's like how many people get killed in road accidents, very tragically, is a lot more than got killed by London Bridge, the statistics… (Interview 8, Participant 1)

> I think really the second paragraph about the 5,000 cases in the UK, that really made me sit up, and 12 fatalities. I thought wow, I would be taking care. I think I would be trying to get hold of some mask to put on if I had to go … certainly if I had to go into town on the tube or something. (Interview 5, Participant 2)

Additionally, the sense of increased scope of the pandemic influenced intentions to adopt protective behaviours.

> This is quite different for me, because this is real and there's a death. We don't know enough about that. There's information coming from the Chief Medical Officer about vaccines and work is being done so this … the number of cases … there's a huge number of cases reported and there've been deaths so I'd go into a little bit of action and I would then think of … look at myself, my family, I mean if I had a flu vaccination, I had other vaccinations, what else is there available? (Interview 5, Participant 1)

> For me 12 people … it's got to be thousands I think. And it's got to be around for me to start thinking well perhaps I should start doing something now. If I was travelling up to London and there'd been some deaths up in London I might be a bit more careful about … I might wear gloves or something, or take my wipes and be a bit more careful what I touch. (Interview 12, Participant 4)

6.5 Behavioural Intentions

This section will present the behavioural intentions of older adult participants in the event of pandemic. After going through the scenario, participants were specifically asked to comment on the behaviours of interest; hand hygiene, isolation, respiratory hygiene, seeking medical assistance, and vaccination. It was not unusual for participants to have spontaneously referenced these behaviours at a prior stage of the interview.

6.5.1 Hand Hygiene

Handwashing was broadly viewed as an effective behaviour to prevent the spread of illness.

> And also it's very annoying, because if people don't wash their hands, they might give themselves something and they're diverting services away from others while they get cured. I think it's very selfish and it's horrible. (Interview 2, Participant 2)

> Well it's [handwashing] eminently sensible and highly doable. (Interview 13, Participant 1)

Some participants also identified this behaviour as being specifically useful with regards to not picking up germs and preventing infection by touching one's face.

> I would wipe my hands. You know, I would take personal precautions, definitely. Because as we say, if you wipe your hands often, keep them clean, depending on which surfaces you touch, there is less possibility that you will touch something and then go like this [touching one's face], or you know, even doing this [touching one's face] to protect yourself, others, from coughing, you're transferring some germs to yourself. (Interview 6, Participant 1)

> Well it's about transmission of germs, disease, bacteria, anything that is contractable and you can pick it up and pass it round and if you've got it yourself you can pass it on. It's just one of … it's interesting, as you mention it, I suppose in the older generation that was probably made slightly clearer. It was one of those things that was just drummed into you, picking up germs, don't pass on germs, that sort of thing. I wouldn't go into too much technical detail about that. I would just get the strapline, wash your hands, don't you know there's a war on. (Interview 13, Participant 1)

Uncertainty over infection transmission routes did, however, raise questions in the minds of a few participants around the effectiveness of handwashing.

> I don't think there's anything you can do about it 'cause I mean it's in the air whether you wash your hands and pick your nose doesn't make any difference. It's around you. You're basically in the hands of the gods. (Interview 3, Participant 1)

> I'm in favour of washing hands and using isopropyl gel as an antiseptic, but I'm not sure how important that would be with influenza, 'cause most of the spread I think is droplet spread in the air and the inhalation, you don't absorb very much influenza virus through the skin, as far as I know. (Interview 4, Participant 3)

A number of participants indicated that they made, or in the case of a pandemic, would make, a point of either washing hands or using hand sanitizing gel or wipes. In many cases this was an activity they would either actively plan for or one that had become habit.

> And so if this did happen, definitely one of the things I would do is check out if there had there been any extra vaccines, one. Two, I would carry this, I would carry extra wipes, so that wherever I go, I touch thing. (Interview 6, Participant 1)

> Another thing I also… 'cause I go into London a lot, I always make sure I wash my hands, whether that's silly or not but I always do if I go to a restaurant or theatre or somewhere I always go wash my hands and my partner, she carries around one of these little antiseptic spray things like you do in hospitals. (Interview 4, Participant 1)

Hand gels were considered to be a functional and cost-effective way to promote hand hygiene.

> Yes, I think if it became an epidemic, or pandemic, yes, then you might be worthwhile because you're going out touching things and people are not as hygienic as they should be. At the end of the day we're all guilty of that I would think, so yes, I would just be a little bit more careful. You know that hand gel stuff? Well when I've walked the dog I always clean my hands and the car keys, because I've touched the car keys to get in the car to get the gel if I've been handling the dog's ball 'cause I never know what's gonna be on that ball when he picks, when I pick it up and throw it. So stuff, hand gels, they're so cheap, everyone should have a couple of those. (Interview 12, Participant 4)

> My grandchildren, when they were younger and they used to come and stay, they wouldn't wash their – would come out the toilet and not wash their hands, so what I always kept was that hand, that's a brilliant idea, the hand sanitizer. Since they brought that out, and people can carry them in their pocket. (Interview 11, Participant 1)

Several participants made reference to hand gel stations in public areas but indicated there was more work to be done in promoting the use and proliferation of hand gel.

> But I think the ones on the walls are very good. And again, we saw – I know we're diverting… We're very involved with our doctor's surgery. We're on the Patient Participation Group, and one of the things we do keep an eye on is the hand-washes on the wall. And if ever they're empty, we do always bring it to the practice manager's attention. It's been quite – not bad, recently. (Interview 2, Participant 1)

> I think it would be like if you go into hospitals now you're used to hand washes, you know, gels and I think that's becoming more and more accepted – public toilets really should have gels. That's something that's so very simple and very basic, so something like that. I think older people, because they've got a bit more time, they haven't got to rush around so much so, they've got time to gel their hands and do them things. I think some of the people who will take that on board they realise that if they want a certain quality of life for their remaining years you've got to be careful and look after yourself, so I think they would take it on. (Interview 4, Participant 2)

Similarly, participants expressed concerns that, whilst they were diligent about handwashing, other members of society were not necessarily as vigilant or were less aware of the proper process.

> I've been into the toilets when some people come out and walk straight out. (Interview 10, Participant 1)
> Don't even wash their hands. (Interview 10, Participant 2)
> You know, you can't do that. (Interview 10, Participant 1)
> You can't… (Interview 10, Participant 3)
> You can't win. (Interview 10, Participant 2)

> Yes, how do people wash their hands? How do you wash your hands? Sorry, I meant sort of part of the question, isn't it? Well the answer is ten seconds … I think it's probably a ditty or something you can … is it happy birthday? Something like that anyway, it's one of those. Now it may seem silly but I would never assume people know how to wash their hands in this time, 'cause if you're giving that as advice but you'd have to say, 'Think about it, I know it's obvious, but the evidence is you just need to do perhaps a bit longer than you think and a little bit more thoroughly than you think.' (Interview 13, Participant 1)

6.5.2 Isolation

Voluntary isolation was independently identified by a few participants as a primary means of avoiding illness.

> Well, you'd isolate yourself really. (Interview 10, Participant 2)
> Yeah, you would really. (Interview 10, Participant 3)
> Tell the family not to come round for a while until it's sorted out, yeah. (Interview 10, Participant 2)

> To avoid getting sick? Stay at home. (Interview 5, Participant 1)

A few participants also indicated they would consider stocking up on non-perishable items in preparation for social isolation.

> But I don't know, I think I would carry on going out, but I would be nervous and I'd be following the news very closely and I'd also probably be beginning to get a few things into the house. I'd be bringing back some water and some tins of food and things <chuckles>, and thinking about what's coming. Not in a huge way but I'd do a bit of that I think. (Interview 1, Participant 2)

> But also people might want extra tissues, loo paper, paracetamol, and that's a good thing to publicise if it's coming on. (Interview 8, Participant 2)
> To get that stuff in ahead of time. (Interview 8, Participant 1)
> Either to have it in because it keeps and also other people can drop that in, the sort of basic things like that. (Interview 8, Participant 2)

Several challenges, however, were also identified in staying home, including the need to run day-to-day errands.

> Keep away, yeah. And marketplaces too, you wouldn't go anywhere where it's busy. (Interview 11, Participant 4)

> But you'd still have to go out and get shopping. (Interview 11, Participant 2)

Participants often used a cost-benefit analysis in their consideration of whether to limit social interactions weighing their perceived need or desire to go out against the perceived risk or threat.

> I might not be so keen to dash off up the pictures or somewhere unnecessary. Not at this stage, at a later stage I might be thinking, 'Perhaps I won't go to such crowded places.' It's a lifestyle thing. (Interview 1, Participant 2)

> Yeah, in some ways…yeah, how bad it gets. When you see in any part of the world we live in… It all depends how a pandemic… Obviously it'd be serious if it's in the area, but if it's in the country, I would still have to go out in the morning – I go walking, I go to the shops. I have to go to the shops. (Interview 1, Participant 1)

6.5.3 Respiratory Hygiene

Several participants indicated (and demonstrated) they were prepared for coughs and sneezes and carry around tissues or handkerchiefs.

> Tissue en route – well, I've always got tissues on me. (Interview 2, Participant 1)

> Or use one of these [handkerchief] (Interview 12, Participant 2)

Although respiratory hygiene was viewed as an effective means of preventing illness, some potential barriers did emerge such as challenge of having a tissue at the ready.

> Yes, if you can get your handkerchief or your tissue out in time, before you cough and sneeze. (Interview 3, Participant 3)
> Yeah. (Interview 3, Participant 1)
> Not always possible because sneezing and coughing are often spontaneous (Interview 3, Participant 3)

> But also sneezing and coughing and getting a hanky out, that sort of thing … I feel quite strongly about that anyway. My husband infuriates me because he sneezes and just does it, just sneezes and … I always manage, almost always manage to get there first with a hanky so I think … probably the majority of people are more like my husband and wouldn't really bother, but I should think that would be important if you could possibly persuade people to have hankies with them and also wash their hands a lot and … (Interview 5, Participant 2)

Additionally, one participant underlined the challenge of disposing of tissues as a potential barrier to use.

> And paper handkerchiefs are widely available at a reasonable price, it's the disposal of them if you're out and about. The wonderful sniffle stations of the Canadian ski resorts, the concept of hiding all the waste paper bins 'cause you're afraid of terrorists putting bombs in them –…No, no seriously, would have to be overcome and would have to be a reasonable site to dispose of the paper handkerchiefs. (Interview 4, Participant 3)

As with handwashing, some participants expressed a perception that members of the general public did not, perhaps, recognise the importance of good respiratory hygiene.

> Well and also, don't you think, no disrespect to anybody 'cause I'm in the same age-group but do you not think most people are now too set in their ways to change their ways. If they're not using their tissues and they're not washing their hands, they're not gonna start now, in their seventies, eighties and nineties.. … So it's the young ones, like my grandchildren, if they cough or sneeze I say, 'Put your hand over your mouth and go and wash your hands'. (Interview 12, Participant 4)

> I would say they [respiratory hygiene measures] were helpful… but you're talking to two middleclass suburban men where you've been brought up to a certain hygiene standard at home and at school and at work and so on and a lot of it is automatic, you know, when you get flu or the start of a cold the first thing you do is to go out and buy tissues, men-sized tissues, and that sits on the table there all the time for anybody to take it and that's used and binned. That's ingrained in you, isn't it? (Interview 9, Participant 1)

While most participants discussed the efforts they consciously take to practice what they perceive as good respiratory hygiene, the notion of 'sneezing into your sleeve' was not generally well regarded. This reluctance to 'sneeze into your sleeve' often resulted from a sense it would be unhygienic.

> But then you're coughing the germs onto that [sleeve] and it's going to pass onto the next person. (Interview 7, Participant 1)

> Because the germs are still there, aren't they? (Interview 10, Participant 1)

One participant, however, indicated his reluctance to use his arm or elbow (rather than a tissue or hand) stemmed more from a concern over societal approbation.

> If I cough, I usually cough into my hands. I don't look aside and I don't go like that, 'cause everybody'd think I might be wiping my nose on my sleeve. I don't know. (Interview 2, Participant 2)

6.5.4 Seeking Medical Assistance

Participant motivations for going to or avoiding the GP were based on several factors including risk of infection, trust in their GP, and logistical challenges. The risk of infection (either catching or spreading) was expressed by a few participants as a factor in seeking medical assistance.

> Well with our GP I'm afraid if I ring in the morning and ask for a home call, phone call, they ring me. I just tell them how I was and take advice on that. I wouldn't go running to a surgery because that's where you're walking into germs and bugs. (Interview 7, Participant 1)

> A phone-call to the doctor, because if you're ill they don't want you in the surgery anyway, if you're really ill. (Interview 12, Participant 1)

For many participants, going to see a doctor appeared to be an almost automatic response to the emerging health outbreak.

> Go and see the quack … the doctor. (Interview 3, Participant 1)
> Phone the doctor I would think. (Interview 3, Participant 2)
> Yeah. See the doctor. (Interview 3, Participant 4)

> No, as I've said, my first port of call is always the GP, I wouldn't look it up, I probably wouldn't understand half of the words anyway. (Interview 9, Participant 1)

Additionally, some participants felt that it was important for them to personally see a physician because their GP would be more aware of their medical history and potential health complications.

> Well I can't [rely on an alternative means such as National Pandemic Flu Service] because I have to be careful what I take. I'd have to actually go and see a doctor. (Interview 7, Participant 4)

> You would take advice, wouldn't you? If you worried, if you were worried and I'm saying we are very complacent and I think we two are quite typical, but if you were worried about it you'd go down to your doctor, surely, and say, 'What must I do?' You know my history, I've got sinus trouble and sometimes I get asthma and blah, blah, blah… and he will say, 'Keep taking…' (Interview 9, Participant 1)

Participant intent or willingness to visit a GP office appeared to be influenced in part by logistics around whether the office would be accessible.

> So I'm not going to go to a GP, because there's going to be queues, with everyone going there, for a start. (Interview 1, Participant 1)

> I don't think I'd bother with the surgery, at first; I think I'd call 111. I might try the surgery, as well, but as you will probably know, it's quite difficult sometimes to get through to practices. (Interview 2, Participant 2)

While the GP appears to be the primary port-of-call for most participants for medical assistance, some suggested that the GP would be unable to do very much to assist in the event of an influenza pandemic.

> I'm saying yes but I think that in normal circumstances if it was like a feverish situation I would probably think that the GP wouldn't be able to do much about it and I'd probably see how it went, but obviously if I deteriorated significantly at that juncture I would seek advice. (Interview 4, Participant 1)

> I think my worry would be, with the pandemic, as there's no vaccine available, as you were saying by this, if you do contact the authorities, I think you're just gonna get the advice: 'Stay in bed and tuck up.' (Interview 2, Participant 1)

When asked about the National Pandemic Flu Service, most participants thought a flu service would be helpful in the event of a pandemic; as long as it worked properly.

> A designated phone line? Yeah, I think it would be useful. Yes. (Interview 3, Participant 2)
> Yes. Does that still exist? I think it does. (Interview 3, Participant 3)
> 'cause then people wouldn't panic, they'd think, 'Oh, I've got this number I can ring and get the help.' (Interview 3, Participant 2)

> Yeah, 'cause even a phone-in service, if there was a pandemic we wouldn't have confidence that the phones were gonna be answered and even websites could collapse, couldn't they, there could be sort of volume. So, like you say, you've gotta have the information there 24 hours a day and it's as accessible as you can make it. But yeah, certainly if there is an expert at the end of the phone I think most people now are quite used to ringing up helplines, but we're also used to the fact that you're number 59 in the queue. (Interview 4, Participant 2)

One participant, though, was quite adamant in his disinclination to use this type of service, preferring to visit the GP.

> No, and that's generational. I'm sure my children would immediately go on the web, I know my daughter-in-law would but me, I would go to the GP. (Interview 9, Participant 1)

While a few participants expressed a preference for the website, there was a marked preference for using a phone-line. Furthermore, even participants who indicated a first preference for the website, often indicated they would follow this up with a phone call. Digital literacy and access to technology was one driver of this trend.

> Well, old people can't use the website, that's a known fact, I can't. But when you phone and you get press this one, press that – (Interview 10, Participant 1)
> I think that's a bit – (Interview 10, Participant 2)
> And that's no good. (Interview 10, Participant 3)
> - that drives you up the wall. (Interview 10, Participant 2)
> No one wants to talk to you anymore. (Interview 10, Participant 1)
> No, they don't. (Interview 10, Participant 2)
> You want to contact a person, a human being and not a voice thing, yeah, a human being, yes. (Interview 10, Participant 1)

> Yeah. I wouldn't go on a computer 'cause I haven't got one. (Interview 11, Participant 1)

Additionally, the desire to speak and to interact with a human being was seen as paramount for some participants.

> I think I might go to the website to find the information and then I'd probably try the phone. But also it's important to have local numbers for people to phone; not some number up in…there's a call centre in Bangladesh; we would like a local number. (Interview 2, Participant 2)

> You can't ask a website questions. (Interview 3, Participant 3)

6.5.5 Vaccination

For many participants, vaccination against seasonal flu has become a habitual action. Consequently, they would also be inclined to be vaccinated during a pandemic if this was advised:

> Apart from the government, if they did then get a vaccine and you were advised to take it, I would take it. I would do. Same as flu vaccination – I go for it every year. (Interview 1, Participant 1)

> Yeah. Well, the way I look at it, you can't be much worse off with a vaccine, although we do have the flu vaccines every year. (Interview 2, Participant 1)

This is supported by the large number of participants who indicated that they had taken the seasonal flu vaccine in the last year. Of thirty-six participants, all but five indicated they had received the seasonal flu vaccine. Amongst the participants who had not received the vaccine, there was no consistency in reasons given. Some said that they had not got into the habit of receiving the flu vaccine, whilst others felt that the seasonal flu vaccine was not effective as it did not cover all strains of flu.

> I've never had a flu jab. Never ever. I don't know if I'd have one now. (Interview 12, Participant 5)

> But you see then everybody has a flu jab and then another type of flu crops up which isn't covered by that jab. (Interview 9, Participant 2)

The relative ease of receiving the seasonal flu vaccination, with GPs contacting patients and a variety of locations to get the vaccine, was referenced as an enabler to vaccination.

> My GP sends us a text saying … vaccine available from such a date. I just make an appointment to go. (Interview 7, Participant 3)

> Well, you can get flu jabs in the chemist these days or the GP but it's been made more easily available for one thing, I think, and it's been widely mentioned and talked about and everybody knows now about flu jabs. Some people still don't take them but that's not the point, they know about it and if they don't take them then that's their fault. (Interview 9, Participant 2)

Some participants expressed that, while they were in favour of the vaccine, they understood that others were not due to fears over vaccine safety.

> It didn't occur to me that people would turn down or refuse to be vaccinated for something like this. If it's going to save your life I think … it would be the best thing. I don't know so much about it as you. I don't know that people refuse. I mean I know things like measles and mumps, there's been a huge discussion about that, but for flu, is that the same thing? (Interview 5, Participant 2)

> Well … I do know people who… and the flu vaccination doesn't have a 100% uptake, does it, and I do know of people who should know better I think, but it's nothing to do with me. Some people see vaccination as … introducing bugs into their system and it's like people believe, some people readily believe that the flu vaccination gives them flu. (Interview 5, Participant 1)

Additionally, one participant's previous adverse reaction to a flu vaccine created a barrier to vaccination for that person.

> No, I was a carer and I had a flu injection, we had to have to A, the B, the C, whatever they are and the flu injection, but I had a very bad reaction, my arm swelled up and I've never had it since. (Interview 11, Participant 1)

A few participants indicated that, though they would not normally be in favour of a vaccine, in the event of a pandemic, they would be prepared to reconsider their position.

> As much as I'm resistant to these sort of things, and I won't expand on that, but I have life experience of suffering from immunisation. I think if something came out and we were all urged to have a jab I would go along and have it, because I think this is now escalating to something that is potentially very serious for the nation. (Interview 4, Participant 1)

> I'm not convinced about immunisation, alright certainly if it's a pandemic it's got to be, but for normal flu for instance I haven't bothered with having a jab because I haven't had flu since I was a kid. (Interview 4, Participant 2)

6.5.6 Other Behaviours

Participants identified several behaviours, other than the ones focused on for this research, that they felt might be beneficial in preventing illness. A recurring theme was the need to avoid particular places or regions in order to prevent exposure to illness.

> But if it's that serious I would say that the government should be putting out a strong warning. I wouldn't go to Greece if I knew this was going on. (Interview 5, Participant 2)

> Well, if I had a trip booked, to go to Greece, honestly, as a sensible person, I would pause and consider. I would look at my dates, and read all this that I have just read now, and think, 'OK, maybe by the time my trip is coming up, something would have been done.' Or if they're offering extra vaccines, I would take it. But if, let's say the trip was almost immediate, and this came out, honestly, I may lose money but I would think of the longer term first, and lose the money, but at least stay well, and fit, and take other holidays. (Interview 6, Participant 1)

Many participants also identified the wearing of masks as a useful protective measure.

> I think I'd be inclined to go outdoors wearing a mask, particularly when I was on the trains, on public transport, 'cause flu does spread very quickly and it's very debilitating very quickly. … I think it would be a good idea to wear a mask because not everybody covers their nose and mouth, and they cough and splutter all over you in the same carriage. (Interview 2, Participant 2)

> We'd probably end up like Japan. They all walk about the masks. (Interview 11, Participant 4
> Yeah. Got the right idea though, haven't they? They put them little masks on them and they go out. (Interview 11, Participant 1)

Participants also identified a number of behaviours loosely associated with lifestyle as factors that might affect susceptibility to pandemic influenza. In particular, participants were supportive of healthy living efforts.

> I might go for longer walks in parks where the air's better or I might go out of London, take an early holiday or something. (Interview 3, Participant 3)

> Well to eat healthily I think is probably one of them. …I think if you eat healthily you feel that you're … able to fight against these things. (Interview 7, Participant 3)

One participant also indicated she would (and does) alter the way she takes communion for reasons of hygiene.

> I serve wine in church, so I serve the host, depending on what rota I'm put on. But I will never, I will never, ever drink from that wine if I'm not serving, because I see people, they go, by the time they are leaving they have dropped some sputum in there, you know… etc. (Interview 6, Participant 1)

6.6 Communication

6.6.1 Information Needs

In discussing their information needs, participants indicated that they would want to have clear, concise and honest information; details about what pandemic influenza is, information on the situation and what steps they can take to protect themselves. Foundational, or basic background information was frequently highlighted as initially important.

> The first question is well how can you get it, and where do you get it from? The logic questions. (Interview 12, Participant 4)

> A helpline would definitely…yeah. But leaflets instructing people what to do, a number to ring… …And symptoms, 'cause you're maybe not aware of what the symptoms are. (Interview 11, Participant 2)

Additionally, participants wanted to have information around actions they could take presented in a clear format.

> I should think the main thing in a pandemic is to ensure that people don't panic. To spread this is the situation and this is what we can do about it, but don't panic… Mr Mainwaring. (Interview 3, Participant 2)

> And this is where I come back to my own view is that there must be some very clear crisp sort of government warning that, as has been said, is visual and it's being repeated and repeated so that people change their mindsets. (Interview 4, Participant 1)

Several participants identified geographic spread as a topic about which they would want to be kept informed, which is in keeping with the role geographic proximity played vis-à-vis risk.

> I wouldn't do anything more than I had already done by I would keep a much closer eye on the story as it develops, to see whether there's any pattern of the people who contracted it with the things that I personally do. (Interview 13, Participant 1)

> I'd want to know where these 5,000 cases were, what part … where in the British Isles? (Interview 5, Participant 2)

Whilst participants identified specific areas where they would want more information, several participants felt that there could be a risk of information overload which could prove confusing and frightening.

> I think in fairness too much information can be confusing, especially if you're somebody that's fickle-minded and you will panic at every little thing. But controlled information can be good. And then not just controlled but you have maybe places where people can go, and it's explained to them. (Interview 6, Participant 1)

> In a way, but I think sometimes the more information you get, the more frightened you get.(Interview 11, Participant 3)

6.6.2 Trusted Sources of Information

Participant responses in pre-discussion questionnaires indicates a marked preference for traditional news sources (ie: television and radio) over new media (See Figure 6-1). In addition, health care professionals were overwhelmingly the

most frequented source of medical information amongst participants (see Figure 6-2).

Figure 6-1 Day-to-Day News Sources-Older Adults (Phase One)

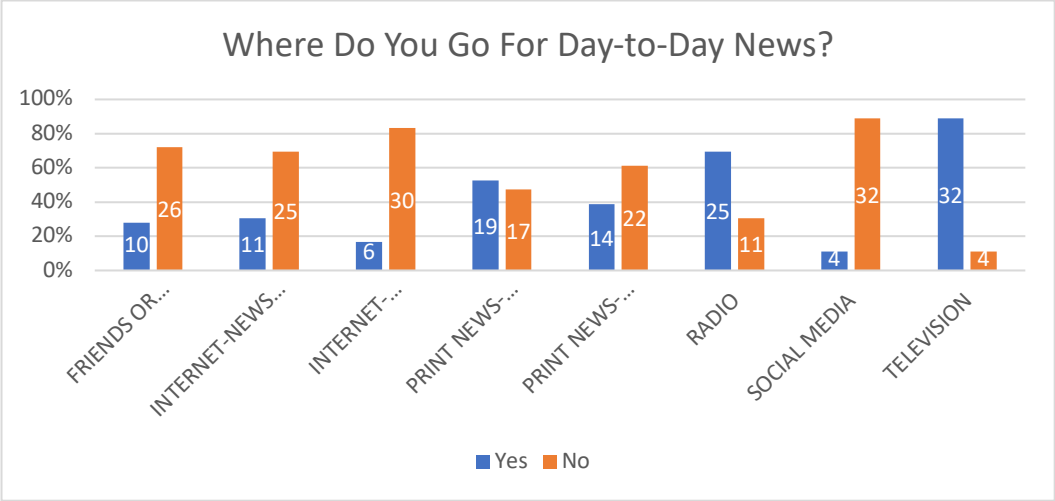
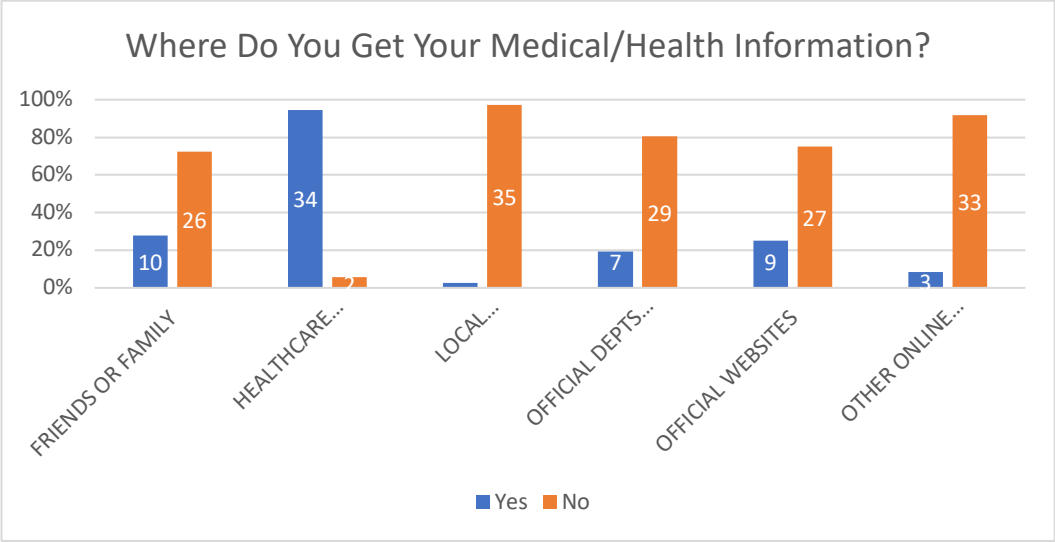


Figure 6-2 Medical Information Sources-Older Adults (Phase One)



In discussing communication needs, participant views reinforced the preferences expressed in the questionnaire. Participants indicated that the use of online and social media platforms to deliver news and medical information could prove challenging to many older adults.

> I'm not saying it shouldn't be on the computer, because so many people are very on the computer all day. All I'm saying is that shouldn't be the main way; the main way should be the radio, the television. (Interview 1, Participant 2)
>
> You wouldn't go on the internet and ask for advice and things like that? (Interview 11, Participant 2)
> No!-Various

> I haven't got a computer. (Interview 11, Participant 1)
> No, I haven't. (Interview 11, Participant 3)

The credibility of particular form of media sources was discussed by a few participants though, without consensus.

> All I'm saying is that shouldn't be the main way; the main way should be the radio, the television –… …I don't trust the newspapers. See, seven people cough and it's a pandemic. I wouldn't trust anything I read in the newspaper, really, without carefully filtering it. (Interview 1, Participant 2)

> I watch the television – television's not a particularly good source because it can never go into anything in any detail, and they tend to sensationalise everything. Newspapers don't have to sensationalise, they can just write about … they're not trying to make an impact in my view. So I would tend to trust the newspapers more than I would there. (Interview 13, Participant 1)

This mistrust of certain forms of media also extended to perceived biases and credibility challenges with particular media outlets or sources.

> Yes, I'm equally somewhat cynical about anything in the media and I often feel that the media- although I would have more regard to statements from the Department of Health, but I think they're very much influenced by the media as well in terms of the media drive them to say you're not protecting the population so then they come out with some placebo or whatever and everyone has to have an injection and blah, blah, blah. So I'm a great cynic on these things but I think if it was from the Department of Health saying that this particular pandemic had got a grip across the world and we really needed to safeguard ourselves I'd probably be more alert. (Interview 4, Participant 1)

> I think, also, who is telling you you're at risk? That's the thing. If The Sun newspaper had a banner heading, 'You're at risk,' I'd go, 'Yeah, aren't we all.' If on News at Ten it came up two or three nights running, I'd be thinking, 'There is something in that.' (Interview 1, Participant 2)

Several participants recommended other forms of communication such as community groups or public access points like transit.

> And I think accessing all the groups, associations who are geared to older people. Let's say U3A's one, over 50's forums, national pensioners whatever associations and whatever federations and whatever they are, a whole range of different agencies, they should be information sharing, but communication basically. (Interview 5, Participant 1)

> And that is a good way to contact people too. Yesterday I was on the underground and there was the notice saying, 'It is going to be hot this week, don't forget to carry water and if you feel ill, get off at the next stop.' And people may not be listening to it but it gets in somewhere. And they can put things on buses too…' (Interview 8, Participant 2)

Though participants tended to comment more on the message and medium of communication, participants also addressed the issue of who they would see as a trusted source to deliver information during an influenza pandemic. Whilst participants generally saw the government as a trusted source of information, many made a point to distinguish 'government' and 'politicians' with the latter category being considered much less trustworthy due to the nature of their role.

> If I can come back on that, I still think that our local MP would be saying the party line or the government line. 'Cause I think the idea of govern…this is why I don't trust the government. I think that they wanna stop panic and if they told the truth, we'd all be panicking, so they'll say, 'Oh, there's nothing to worry about.' And that would worry me when they say, 'Nothing to worry about.' So I don't trust the authorities, really, to tell us the truth of what's happening. (Interview 2, Participant 1)

> Ah, yes. The Minister of Health is a politician and I said earlier, I don't trust them as much. So yes, if it was from an official in the Public Health England I would believe it more than if it was let us say the Minister of State for Public Health. That's not, in a sense, a criticism because politicians have to manage the news. I mean that's part of the art of being a good politician, but if you said do I believe it, that's a different matter. You want the white coats up there, to put it bluntly. They're the people that usually the public trusts more. And you need probably a person of mature years, male or female doesn't matter, a pleasant smile, looks authoritative, exudes confidence and expertise. (Interview 13, Participant 1)

Medical authorities were broadly seen not only as a trusted source but also as a primary contact.

> The GPs, I'm thinking, give you a lot of advice if anything like that starts, if they have the mind to do it. (Interview 7, Participant 1)

> I think the first step would be your doctors really. 'Cause he should know really. (Interview 10, Participant 1)

6.7 Discussion

Interviewees were, broadly, able to identify several key components to a pandemic; most notably the geographic distribution, proximity and the potential for high morbidity and mortality. Furthermore, several participants also felt that public services would be severely affected during a pandemic due to resource strain. This may indicate an area where public health communication could be used to address underlying assumptions which, whilst not necessarily incorrect, could cause either undue concern (at the outset of a pandemic) or complacency (should the pandemic, as with H1N1, not be as severe as assumed).

The nature of pandemic influenza as a novel virus, distinct from seasonal flu, was not, however, generally recognized. This may be an area to address in improved communication as older adults may, for example, consider themselves to be safe if they have had the seasonal flu vaccine not recognizing that pandemic influenza is an altogether different illness. Improved communication may also be beneficial with regards to the origin and spread of pandemic influenza to clarify that the nomenclature does not necessarily mean the virus is limited to the species mentioned, but rather that the virus originated in the specified animal population. Although there are areas where older adult knowledge of pandemic influenza could be improved, these results correspond to those of previous studies which found that older adults tend to have higher knowledge or understanding of pandemic influenza;[349] this may be due to experience with older adults having lived through previous pandemics.

Geography, or proximity, was a primary factor affecting perceptions of risk amongst older adult participants. In the first stage of the scenario, the very fact that the influenza was in Greece and had not yet reached UK shores was cited by several participants as lowering their level of concern. Even in the second stage, with a pandemic declared and several fatalities in the UK, some participants still felt that their risk was comparatively low and they would not be overly concerned unless morbidity and mortality increased in their immediate area (often defined by borough). The finding that participants were likely to consider proximity as a determinant of risk is in keeping with previous research during the early stages of the 2009 H1N1 pandemic which found that levels of concern (and willingness to adopt protective behaviour) were influenced by proximity of the pandemic.[350] The role of proximity in affective public perceptions of risk has also been identified in research on other public health issues. A German study on mobile phone base stations found that concerns about, and attribution of ill health was connected to

[349] Tooher et al., "Community Knowledge, Behaviours and Attitudes about the 2009 H1N1 Influenza Pandemic: A Systematic Review."
[350] Tooher et al.

residential proximity.[351] Additionally, the use of high morbidity and mortality as a descriptor or characteristic of pandemic influenza is in keeping with the overall experience of pandemics however, may create a challenge for practitioners as the recent H1N1 pandemic (2009) was less virulent than initially feared. [352] This, in turn, is likely to affect public perceptions of the severity of future pandemics as research has shown that experience will affect perceptions of risk.[353]

Perceptions of at-risk groups were generally static and largely reflected the priority vaccination groups for seasonal influenza.[354] This assumption around risk applying to traditional profile groups such as older adults, children, pregnant women, and immunocompromised individuals, represents an area where communication may be required to counter existing beliefs. In the event that a pandemic presents with an atypical risk profile (such as younger adults instead of older), pre-existing assumptions around risk will likely need to be addressed. This represents an area that has not been broadly researched as most pandemic risk-related literature examines personal or situational (i.e.: overall pandemic) perceptions of risk rather than exploring perceptions, or assumptions, of at-risk groups.

Perceptions of behavioural efficacy regarding the five target behaviours was largely positive. Handwashing or the use of hand gels to improve (or maintain) hand hygiene, respiratory hygiene practices and, vaccination were all felt to be effective ways to prevent the spread of illness. The use of the National Pandemic Flu Service phone line was felt to be a potentially useful way to gain information but, it could be hampered by excessive wait times. Isolation was also considered to be effective as a behaviour but doubts were raised regarding the ability or willingness of participants to fully adopt this practice. These overall positive perceptions of efficacy and the correlated willingness to adopt (largely) is in line with previous

[351] Blettner et al., "Mobile Phone Base Stations and Adverse Health Effects: Phase 1 of a Population-Based, Cross-Sectional Study in Germany."
[352] Crosier, McVey, and French, "By Failing to Prepare You Are Preparing to Fail': Lessons from the 2009 H1N1 'swine Flu' Pandemic."
[353] Taylor et al., "Crying Wolf? Impact of the H1N1 2009 Influenza Pandemic on Anticipated Public Response to a Future Pandemic."
[354] NHS, "Who Should Have the Flu Vaccine?"

research which has found perceptions of behavioural or response efficacy to be key in determining willingness to adopt protective behaviours such as improved hygiene and voluntary isolation during a pandemic.[355]

Although isolation was felt to be an efficacious behaviour, as a general practice, the ability of participants to implement it was discussed. Even if participants were willing to isolate, the need to run day-to-day errands was highlighted as a barrier to action. In contrast, self-efficacy barriers to hand hygiene or respiratory hygiene were not identified by participants; and, in many cases, these practices were already being undertaken. Participants did not indicate that they would have any issues around going to get vaccinated though some questioned whether or not they would. The perceived difficulty in adopting isolation as a preventive behaviour is in keeping with the existing literature which has found, across the public, that this behaviour is frequently seen as challenging to implement.[356] Within this particular age group, the results on isolation are somewhat more nuanced. Although the overall indication is that older adults are as willing to comply with isolation as the general public, there has been some research that indicated that older adults may be less inclined to support social distancing measures than younger populations.[357] Unlike Hilyard, older adult participants in this study veered more toward being supportive, though particular challenges around day-to-day living were often identified and may indicate an area for policy consideration in the development of pandemic preparedness plans. The policy implications of this research will be further discussed in Chapter IX.

Capability factors, whether physical or psychological, were not identified as key barriers or enablers to action, with two exceptions. One participant indicated that they would not vaccinate due to a previous adverse reaction. As well, whilst many

[355] Gaygisiz et al., "Individual Differences in Behavioral Reactions to H1N1 during a Later Stage of the Epidemic."
[356] Baum, Jacobsen, and Goold, "'Listen to the People': Public Deliberation about Social Distancing Measures in a Pandemic."
[357] Hilyard et al., "The Vagaries of Public Support for Government Actions in Case of a Pandemic."

participants were already practicing good respiratory hygiene, the need to get to a tissue in time when coughing or sneezing was referenced as a potential difficulty. This is in keeping with previous research which identified practical considerations such as tissue access as potential barriers to the adoption of protective behaviour in a pandemic. This research suggested that communication interventions be considered to address potential barriers to uptake of protective behaviour.[358]

Motivational factors played a significant role in participant determination of whether they would intend to isolate during a pandemic. Although isolation was acknowledged as an effective behaviour and one which participants would be more or less able to adopt, some participants indicated that their willingness to isolate would depend on their perceived sense of risk or threat balanced against what they were being asked to give up. Therefore, a trip to the cinema might be foregone but a morning walk would continue. Some participants also identified vaccination (seasonal flu) as a habit which would facilitate their intent to vaccinate during a pandemic. This finding supports the need to improve seasonal flu vaccination rates amongst older adults (a designated priority group) which, although largely successful in the UK, vary widely across Europe.[359] Finally, although not applied to them personally, several participants felt that societal pressures and norms were not universally applied (in terms of age, culture, or socio-economics) when it came to matters of hand or respiratory hygiene.

Opportunity costs were generally not seen as severe, much less insurmountable. The most significant opportunity barrier identified was around seeking medical assistance or information using means other than the GP. The use, and sometimes reliance, on technological based platforms creates a challenge for some older adults who may not have access to the internet or who lack the knowledge to navigate. This age-based disparity vis-à-vis internet access and/or literacy has been

[358] Morrison and Yardley, "What Infection Control Measures Will People Carry out to Reduce Transmission of Pandemic Influenza? A Focus Group Study."
[359] Kovacs et al., "Medical and Economic Burden of Influenza in the Elderly Population in Central and Eastern European Countries."

identified in the literature[360] and also by practitioners.[361] The presence of hand gel stations in public areas was viewed as a positive step toward encouraging uptake of hand hygiene however, it was expressed that these are not as prolific as they should be be and, is in keeping with Morrison's research findings around practical barriers to action which suggested practical steps be taken to improve awareness of and remove barriers to uptake of protective behaviours.[362].

Overall, the results of this study indicate that older adults are generally accepting of and engaging in the type of health protective behaviour that would be recommended during an influenza pandemic. However, the issue of opportunity; where the number of public handwashing and hand gel stations could be increased, where confidence in the ability to reach a medical advisor (ie: through the National Pandemic Flu Service) could be improved and where bins to dispose of tissues could be more readily available. Older adults, writ large, appear to have confidence in both the efficacy of recommended behaviours as well as in their ability to adopt said behaviours.

Previous research has found that public information preferences centre around clear, informative, and constructive information[363] and, participants in this study were no different. Advice around what measures individuals could take to protect themselves as well as information on morbidity and mortality rates, particularly vis-à-vis geographic proximity was highly valued. Receiving this information from a trusted source was also a consideration. Traditional news sources were greatly preferred by older adults with radio and television slightly outpacing newspapers. This result is consistent with previous research conducted in the United States[364]

[360] Jehn et al., "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic."
[361] Chapter 3, Section 5, Subsection 3
[362] Morrison and Yardley, "What Infection Control Measures Will People Carry out to Reduce Transmission of Pandemic Influenza? A Focus Group Study."
[363] Barry et al., "Respiratory Hygiene Practices by the Public during the 2009 Influenza Pandemic: An Observational Study."
[364] Jehn et al., "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic."

and Australia[365] which found the primary source of information, amongst the general public, was television. The use of alternative information forums such as posters on public transport or dissemination of information through community groups was advocated. The comparative lack of familiarity with and access to technology-based information sources does present a challenge to emergency planners to ensure that this segment of the population is kept informed. In addition, the breadth of traditional media outlets, both in terms of type (print, radio, television) and subsection (variety of outlets and programmes) coupled with the lack of consistent views regarding the credibility of each creates an additional hurdle for communicators attempting to ensure this population is kept informed during a pandemic.

Whilst older adult participants demonstrated awareness of influenza pandemic and intent to adopt protective behaviours, this research identified a few areas where communication, or policy, could be used to address knowledge gaps and reduce barriers in order to improve update of protective behaviour in a future pandemic. Although aware of pandemic, many older adults expressed misperceptions around the nature and spread of pandemic influenza. Improving awareness of pandemic influenza may help to forestall future communication challenges such as confusion between seasonal and pandemic flu vaccines.

Participants were supportive of the recommended behaviours though, opportunity costs were raised in relation to both seeking medical assistance and voluntary isolation. Many participants indicated that they would not seek medical assistance (either in person or through a Pandemic Flu service) if the wait times were considered to be prohibitive. Additionally, although older adults were open to isolation and, indeed, many indicated this would be easier for their population group to employ as opposed to the general public, several participants raised the challenge of day-to-day requirements such as groceries or medication as impeding their ability to isolate. This suggests areas where government, working with both

[365] Marshall et al., "Awareness, Anxiety, Compliance: Community Perceptions and Response to the Threat and Reality of an Influenza Pandemic."

public and private sector partners, could examine ways to reduce opportunity costs associated with the uptake of these behaviours.

Information needs for older adults in this scenario were consistent and in keeping with previous research on public information preferences. Participants expressed a strong preference for clear, factual, actionable information which would inform them about the pandemic and steps they could take to protect themselves. In keeping with the views expressed by Emergency Planning practitioners in Chapter Three, section 5.3, participants also expressed a preference for traditional media sources rather than digital and also recommended the use of public advertisement (such as on the side of buses) and dissemination of information through community groups. This suggests that current planning assumptions around the information needs of older adults reflect the stated needs of this population group.

6.8 Chapter Summary

This chapter examined the results from the first phase interviews with older adults. This consisted of a two-part scenario examining risk perception, behavioural intentions, and communication needs of older adults during a pandemic. The results of this study indicate that older adults, for the most part, are engaging in recommended protective behaviours however their perceptions of at-risk groups tend to be quite static and do not take into account the potential for atypical risk profiles during an influenza pandemic. Therefore, for the second phase of data collection, the scenario was advanced to a stage when vaccination would be available to priority groups. This allowed for the testing of older adult information needs and behavioural intentions in a situation where their perception of risk is challenged. The next chapter will present the results of the first phase group interviews with younger adults.

7 Chapter VII: Perceptions of Risk and Behavioural Responses Amongst Younger Adults in the Face of an Outbreak of Pandemic Influenza

7.1 Chapter Overview

This chapter presents the results of interviews that were conducted with university students aged 18-25 in order to (a) gain a better understanding of younger adult knowledge and understanding of pandemic influenza, (b) identify the types of behaviours that younger adults may exhibit during an outbreak, (c) explore younger adult views on recommended health behaviours, and (d) identify information needs and preferred sources of communication amongst this group.

7.2 Knowledge and Understanding of Pandemic Influenza

Participant knowledge and understanding of pandemic influenza was not consistent and tended to focus on the impact of an outbreak rather than its nature or characteristics. Whilst a few individuals correctly identified the emergence of a new virus as a condition of pandemic influenza, most categorized it based on either perceived threat, the potential spread, or influenza itself.

In describing a pandemic, participants would often equate it to a crisis or global threat.

> A pandemic is a crisis of sorts or when a disease a health matter spreads very quickly across geographical lines. (Interview 7, Participant 3)

> I think the word pandemic influenza makes it sound like it's a really big problem, and I don't know whether it's like Ebola or whatever, but it just makes me think 'cause the word pandemic, it sounds really scary I guess, versus a normal flu and everything, yeah. (Interview 8, Participant 2)

This sense of crisis was frequently referenced in the context of historical examples, such as the 1918 Spanish flu.

> Kind of makes me feel like lots of people dying. Probably 'cause I think that was the Spain example – some time ago it happened and the amount of people that died was like similar to world wars actually. (Interview 7, Participant 1)

> I think of the Spanish flu and of an article in National Geographic I read about illnesses and it spreading like wildfire and it killed more than the Bubonic Plague was it? So I guess something really serious if you don't do anything to stop it. (Interview 1, Participant 1)

For several participants, the term 'pandemic' brought to mind, not necessarily crisis, but rather a perception of danger.

> Yes, it makes me think about the, a diseases spreading widely in the world and you are, like, in danger. (Interview 1, Participant 3)

> Yeah because I think to me a pandemic can be any disease, it could be something very dangerous like Ebola or SARS and I'm more concerned with my own health and so the flu is probably gonna kill off people who are either very, very young or older, but like a pandemic can be diseases that can kill anyone and so I guess that's the kind of distinction. (Interview 8, Participant 3)

Although the majority of participants felt that a pandemic was something to be concerned about, a few individuals expressed the view that the term 'pandemic' could prompt scaremongering or hysteria and result in people overreacting to the threat.

> But also when I hear this term I think of a bit of panicking going on, about this sometimes people overreact and the media coverage is a bit biased sometimes. (Interview 4, Participant 3)

> So when I hear pandemic, to me it just sounds like mass hysteria, but something I don't think I have ever been personally concerned with, and I think maybe that's partly because I've been privileged to always live in a country that had universal healthcare so I always knew that I could get help if I needed it, but also the privilege of not seeing people around me die from it. So no, I've never been concerned with it and I don't think I would be. (Interview 5, Participant 4)

A few participants also referenced the differences, or confusion, in identifying a pandemic rather than an epidemic and how the different labels could prompt different levels of concern.

> I also try to remember the differentiation between a pandemic and an epidemic, because I'm much more … my fears are quelled of a pandemic influenza but then if I hear of an epidemic influenza I'm like oh, that's really bad, that's like world-wide … if I'm getting those terms right. But I always think about how it's a pandemic and it's bad but it could be worse, because it could be an epidemic. (Interview 7, Participant 6)

> I'm not sure the difference between… because there's still just like pandemic and epidemic and endemic, so I don't know how serious it is but obviously it's something that happens at a large scale and it's not yet contained I think. That's my opinion. (Interview 8, Participant 1)

The role of contagion was brought up by several participants, not only in reference to an increased likelihood of self-isolating but also as a general characteristic of pandemic influenza.

> I think if you have a word like flu it makes a difference because you immediately think that it's contagious, whereas if you have another name, even if it is contagious, it's not the first thing that comes to mind. (Interview 4, Participant 3)

> It seems like a very contagious … condition which is quite dangerous for people who are affected by it. (Interview 5, Participant 6)

Several participants associated contagion with the visible and notable spread of the illness. It was also identified that this spread would not be confined to one nation or region.

> Yes, it makes me think about the diseases spreading widely in the world and you are, like, in danger. (Interview 1, Participant 3)

> Widespread influenza, something that's across countries and internationally. (Interview 9, Participant 1)

In defining pandemic influenza, participants were divided between those who focused more on the 'flu' aspect and rather than 'pandemic'. Participants who focused on 'influenza' tended to express a somewhat more laissez-faire perspective.

> I just think of common flu, pandemic influenza. I don't know if that's what it is but that's what I think of. (Interview 6, Participant 1)

> This is where I see it's needing to contain that speed of the spread of the contamination or the disease or whatever is in question, and flu as in flu to me is the common cold, flu symptoms like temperature, fever, that's the flu to me. (Interview 7, Participant 3)

Conversely, those participants who focused on 'pandemic' were more likely to view an influenza pandemic as a matter of grave concern,

> Pandemic makes me worry a bit 'cause it's like such a big outbreak, I think, and the flu is quite a dangerous virus, so it can mutate and that mutation might be really dangerous and wipe out lots of people. (Interview 2, Participant 3)

> I think you associate it with quite like a serious thing, but it could be not as bad as it sounds maybe. Like when you say 'the flu', oh, that's fine, but pandemic influenza sounds really … so it's just we're not used to it, to hear that, said in that way I mean. When you speak of flu or hear about it, it's always kind of, 'Oh, it's the flu.' (Interview 5, Participant 1)

When questioned about a possible distinction between colds and flu, participants broadly expressed the view that, not only is there a difference vis-à-vis severity but, that this sense of severity altered their willingness to adopt precautionary or recuperative measures.

> I was going to say it does sound more serious 'cause a cold could be just anything, I mean I have a runny nose, I have a cold, I have laryngitis, I have a cold, you know. Whereas when you say it's pandemic influenza, you know what it is. It's usually more serious as well and I think more about taking care of myself better and trying to …get better, if I had this than if I just had a cold. Don't just think no, I'll drink tea. (Interview 5, Participant 6)

> I think there's also an element of contagiousness, so if I've got the flu I'm allowed to stay at home 'cause it could be contagious and it's not good to spread but the common cold is the common cold and if you don't get it you're probably weird, you know … But I know they are used interchangeably here but back home where I'm from they would ask you if you had a cold or if you had flu, there was a differentiation between the two terms, because if you did have the flu then it was fair for you to go to the doctor and check that in, but if you just had a cold it was like OK, yeah, you have a cold, that's fine. (Interview 7, Participant 6)

A few participants also correctly identified not only that an influenza pandemic would involve a new virus but also that this, in turn, could create a serious public health challenge.

> Pandemic makes me worry a bit 'cause it's like such a big outbreak, I think, and the flu is quite a dangerous virus, so it can mutate and that mutation might be really dangerous and wipe out lots of people. (Interview 2, Participant 3)

> I'd say it's very widespread and there's no quick remedy to it so I feel like most of the time it seems like you're researching always a new strain of virus and you need to find new solution for it, stuff like that. (Interview 7, Participant 5)

Participants were asked if they had any experience with pandemic influenza and, whilst the majority of participants had not, a sizeable minority indicated either personal, familial, or societal experience via the 2009 H1N1 (Swine Flu) pandemic. One had direct personal experience having contracted and been treated for H1N1.

> I contracted swine flu once…. …I mean like I said, in the UK they have like Tamiflu which are the tablets that get rid of it within three/four days; I was fine within three/four days but in other countries you can see the death toll rising and rising. I think my mum was slightly worried but I felt fine after like three days (Interview 4, Participant 6)

Amongst the recollections of those individuals who had experience with pandemic influenza, the key theme that emerged was the disruption of normal life through service limitation, quarantine and additional measures in public places to prevent the spread of infection. A few participants felt the effect of the pandemic via the shut-down of schools as a precautionary measure.

> I don't really have experience of pandemic per se, but I have experienced, not me personally but Swine flu, around the Southeast Asian region. I knew it was a big problem, even though it didn't affect me. Somebody at my school got infected and there was a public announcement and we stopped school for a few days just in case anybody else had the same problem, but ultimately it turned out not to be, so it was fine, but I don't think it was on the scale of a pandemic flu. (Interview 1, Participant 1)

> Yeah, well I am back in Mexico City in 2009, … … we had this pandemic influenza and then the school stopped and we had a lot of different measures to protect from the disease. (Interview 1, Participant 3)

For some participants with prior experience of pandemic, the aspect that was mentioned most was the implementation of quarantine.

> People at my camp caught one of them, I think it was H1N1, yeah and they had to be quarantined. (Interview 3, Participant 2)

> It's not exactly my personal experience but someone very close to me had H1N1 and their mother was the first pregnant woman to ever get it, or something like that, it was in South America where I'm from. Yeah people had to be in quarantine for a very long time, they had no idea how to deal with that case at the moment, could be very scary I guess. (Interview 3, Participant 3)

Still other participants remembered the measures taken at airports to reduce the spread.

> I've never been affected by it personally, but definitely when I was growing up in Malaysia as I was telling you earlier, so our schools were shut down for maybe one week, a few days 'cause… I think it was SARS, I'm not even sure whether that's an influenza or H1N1 to be honest, but yeah, it was definitely a bit of a concern and then when you walked through airports they always had screenings there, but I think that's probably the extent that I've been affected by it. (Interview 9, Participant 1)

> It was the same in my country as well, most recently is the H1N1 virus and all the airports had quarantined zones that you had to go through and you had … other than that I don't have any experiences of it. (Interview 9, Participant 3)

7.3 Baseline Perceptions of Risk

Prior to introducing participants to the scenario, participants were asked to discuss their views of 'risk' and 'vulnerability' as well as who they think would be at risk in a pandemic. At each stage of the scenario, participants were asked to discuss whether they would consider themselves to be at risk and why.

7.3.1 The Lexicon of 'Risk' and 'Vulnerability'

For many participants, 'risk' and 'vulnerability' are treated as interchangeable terms.

> I think if I heard those two in a news context about a pandemic influenza, I wouldn't think differently. I think in my mind they would be pretty interchangeable. (Interview 5, Participant 4)

> I would probably interpret it like I think it's quite mutually interchangeable, that context, like vulnerable usually you say… I mean when people say you're at risk of something, necessarily it does mean that you are more vulnerable to contracting certain diseases. So I don't see it… like if I read that in a pamphlet I wouldn't see the difference. (Interview 8, Participant 1)

Two participants did, however, indicate that whilst the words are effectively synonyms, there may be different emotion attached to each.

> I think both are pretty similar, I guess in terms of which one will affect like more and have more impact, probably vulnerability 'cause like risk, we can just throw the word risk anytime, but then it's like oh it's really vulnerable, it's more deep, it's intense like we really need to take focus more on it. (Interview 4, Participant 5)

> In terms of my emotional reaction to the term it's much more emotive, vulnerability, than risk. I mean … because the way I see risk is more scientific or based on physical analysis, whereas vulnerability maybe to do with emotional state and I always feel, react to it very differently if I would see it in a newspaper article, for instance I think maybe it would grab my attention much more, vulnerability. It seems like it's a more emotive term. (Interview 7, Participant 3)

Amongst the participants who felt the terms were not wholly interchangeable, vulnerability was characterised more negatively than risk.

> I feel think when I hear the word risk I feel like there is a difference because risk has a positive outcome in certain circumstances, whereas vulnerability is just a negative word, there's no like… if you leave yourself vulnerable then you can only have a negative consequence, whereas a risk, you can take risk, for example, you can have risk and reward, risk and consequence and I think that changes the way the world is seen. So risk can have a positive impact in some circumstances, whereas vulnerability you have no kind of positive outcome out of it. (Interview 4, Participant 6)

> I think when you say risk you can be low risk or high risk, whereas vulnerable kind of just indicates weakness or like straightaway someone's vulnerable, means your probability of harm or possibility of harm is quite high, whereas if you're talking about at risk you could be low risk or high risk, so yeah, so not as strong as vulnerable. (Interview 9, Participant 1)

Vulnerability was also described as a more innate characteristic than risk, and one over which people would have less control.

> Yeah, I think it's like vulnerability's more internal, like oneself, whereas risk's external. … …Of course vulnerability might also be affected by the external environment but it comes from a more micro perspective, we're talking about a person or a group, instead of like the general environment. (Interview 6, Participant 2)

> I think to be vulnerable is more like initial susceptibility whereas risk is something that I put onto it myself, so when I go into work I'm putting myself at risk at group level, but if I'm just a vulnerable population I'm by definition more susceptible, so I would say the children and elderly are vulnerable because they're by definition susceptible, but at risk individuals are ones that live in cities for example because they're around more people so I would say one you can control and one you couldn't maybe, to a certain degree (Interview 7, Participant 6)

In a similar vein, vulnerability was associated with a loss of control around avoiding threat.

> I think that with risk you can avoid it, whereas with vulnerability it's not as avoidable as when you're at risk. If it's risky you would for example not go on the tube, whereas vulnerability means that you would change your diet or get a flu vaccine. (Interview 6, Participant 4)

> It seems that I have less power to avoid it [being told you were vulnerable rather than at risk], but that's how I feel about the words, the different translations. (Interview 7, Participant 5)

Finally, vulnerability, rather than risk, was seen to be strongly linked to the impact of an influenza pandemic.

> I think risk is something that might be applied more properly whereas vulnerable, I guess, identifies a specific subset of the population, at least if we are using it in the context of pandemics. So if you tell me that elderly people and babies are at risk of contracting this, I would think to myself everyone probably have roughly similar risks of doing so, but I think vulnerability focuses a lot more on the impact on these individuals, given that they have contracted that. Because it's not just about them contracting it, it's also about the severity of health impacts, yeah. (Interview 4, Participant 1)

> I think for me 'at risk' would go more towards how likely you are to contract it, and vulnerability would be how severely you'd be affected if you are, so going back to the elderly people… (Interview 5, Participant 6)

7.3.2 At-risk groups

Participants identified older adults, children, immune compromised people and pregnant women as most likely to be at risk during a pandemic influenza outbreak. This was attributed to these groups having weaker immune systems.

> I'd say babies, pregnant women, old people. … …They're more sensitive in the sense that they're weaker, so for example, babies don't have… haven't built an

> immunity system the same as we have for example, or old people tend to get illnesses more frequently than we do. (Interview 4, Participant 3)

> In the high-risk category? Well immunocompromised people are more susceptible to getting things, and then the elderly are as well just because they're generally a bit more frail and a bit more weak and the very young just don't have the full immune system, so if I come into contact with it I like to think I'm fairly healthy and immune sound, so I could have the potential to fight it off, whereas someone who's very frail or young or ill, their immune systems are already struggling anyway so it's harder for them to fight it off, so if they come into contact with the carrier they're a lot more likely to be struck down by it. – Interview 5, Participant 1)

One participant also singled out children, not on the grounds of weaker immune systems but rather, as a result of poorer hygiene practices and contact.

> I think more the young 'cause they are not so aware of the hygiene, the way they play together there is high risk of spreading the flu among them. (Interview 9, Participant 2)

A few participants indicated they felt that everyone would be at risk, though often with the caveat that certain groups might be slightly more at risk.

> I guess everybody would be at risk but those are the people that you think more so, more concerned for. (Interview 1, Participant 2)

> Everyone, in that I don't think there's a specific target, obviously I think more vulnerable people generally like older people or really young people like babies or whatever are more at risk, but I think no one's completely safe from it. So that's how I think pandemic means. (Interview 8, Participant 1)

Environment was also seen to play a role, with exposure to higher density areas considered to be a risk factor.

> Urban areas, where people tend to live in clusters close together or interact in a small geographic area, so the risk of spreading is much quicker. (Interview 7, Participant 3)

> But also groups of people that commonly interact in large groups I suppose, you come into contact with a lot of other people and if it's contagious disease you'd be at a higher risk of contracting it as well. (Interview 5, Participant 2)

This, in turn, led to students being spontaneously identified in one Interview as potentially at-risk.

> Probably students. … …'Cause they're in a school with like hundreds of other people all day, flu would spread easily. (Interview 3, Participant 2)

> And a lot of students live together in shared accommodation so then it would be easier to catch it when they're like at home or whatever. (Interview 3, Participant 4)

When asked how they would respond if they were told that 20-40 year olds were at risk, participant responses ranged from quite concerned to unconcerned. Often those individuals who felt less at risk, did so because of a perceived disconnect between age or health status and susceptibility to flu and a perceived sense of invulnerability.

> I guess I would take it more seriously if it's really targeted to me than if it's just general population kind of warning. But I think I'd also, wouldn't think I'm particularly vulnerable even if I'm at risk of getting it. Probably in my mind I'm sure even if I do get it, I'll be fine, I'll survive! (Interview 5, Participant 2)

> I think diseases are not normally targeted to young adults, so I'd probably like … oh is this an STD or something! (Interview 5, Participant 3)

When it was drawn to their attention that they might be in at-risk group, a recurring theme amongst participants was a desire for more information, particularly explanatory information.

> I'd wonder why and then I guess the most logical explanation for that would be I guess we have increased social interaction so I'd factor that into my plans …I guess. (Interview 5, Participant 6)

> I'd question how they came to that conclusion – what measurement they used, what factors they looked at and determined me as having come to that conclusion that I was at risk. I'd probably question it, yeah. (Interview 7, Participant 3)

Acceptance of being in an at-risk group was strongly linked to intent to actively engage in health protective behaviours.

> I would try and find out the percentage, is it necessarily higher than the general population and what does that mean, what kind of lifestyle changes would I have to make to lower my percentage of risk. (Interview 8, Participant 1)

> I would be so anxious! I would do everything that I can to prevent getting being infected, because that's, I guess that's just what I … if I don't feel … it's like there is a bar and if the risk is over that bar then I would put so much effort in but if this is less than that then I wouldn't care that much. If I heard some news about my age people, my age really is prone to getting infected more, then I would put so much effort, much more effort. (Interview 9, Participant 3)

Socio-economic factors were suggested as having an effect on risk both from a state perspective as well as individual.

> Less developed countries, they often lack the infrastructure systems to cope with these pandemics, like referring back to Ebola, most of the pandemic actually happens in just a few West African countries and those country are relatively some of the least develop in the world so they lack the infrastructure and the entire

> medical healthcare service to cope them through the pandemic, whereas say here in the UK we already have an established medical system so the chances of having a pandemic outbreak is less likely. (Interview 4, Participant 4)

> People who live in like the poor areas. If you didn't get no sanitations and like clean water and stuff. (Interview 5, Participant 7)

Although only identified by one individual, healthcare workers were mentioned as a potential risk group, given their frequent contact with illness.

> And I think healthcare professionals as well, because obviously they come into contact with people that are ill all the time and of course there's procedures and try to be as safe as possibly but I'm guessing it would be an issue if you're a doctor and you see people with the flu all day long. But I'm not sure if we're talking about more about the vulnerability or the likelihood to catch it, which is quite different. (Interview 5, Participant 6)

7.4 Risk Perception in the Scenario

7.4.1 Stage One: On the Cusp of an Outbreak

In the initial stage of the scenario, the fact that the outbreak was taking place in Greece influenced risk perception both positively and negatively, depending on perceived proximity of the outbreak. For several participants, Greece was deemed to be enough of a distance away from the UK that the outbreak was not an immediate threat.

> Since it's happening in Greece it doesn't feel like… I don't feel like there's anything that I should do because it's not happening here and I wouldn't feel at risk of catching it because it's not here. (Interview 3, Participant 4)

> The story, when I just read it, I thought immediately well there is something going on, but then when you think about it more you realise that it's very far away and you should not be too worried, so I guess I wouldn't do anything. (Interview 6, Participant 4)

Other participants expressed the view that, whilst the flu originated in Greece, in geographic terms, this was still relatively close and, thus, did not greatly reduce the risk.

> The fact that it's contagious and it's heard that it affected many people in Greece so why not spread in the rest of the EU countries as well? And there was a comparison with a Spanish virus I think, which was quite a big deal, so if it's a similar situation I would be worried. (Interview 4, Participant 3)

> I agree though that to me Greece is quite near, and that's just because I used to live in the United States, so when I did live there it was like oh, Greece and Europe is far, but now that I live in Europe I'm like ah, everything's close, but I think that's

> just my perspective, being from a place that is quite distant. (Interview 7, Participant 6)

Similarly, several participants expressed perceptions of risk around travelling to the affected area.

> I most probably wouldn't think … I'm adopting a wait and see approach because, as the article says it's still early days. So it might be very infectious but we know that certain strains are infectious but they're not very fatal. It might turn out to be one of them or it could turn out to be both, like highly infectious and highly fatal, so I would adopt a very cautious approach like not travel there, advice against friends and family going there, like you said. Prevention is the best cure. (Interview 1, Participant 1)

> I think for me the first thing I would do is to not travel to Greece. (Interview 4, Participant 1)

For others, their perception of the severity of the situation was increased by the proposed UK government travel ban.

> I think that if you are banning travel because it's happening something serious, so if I have a trip obviously I will cancel it and I will think, if my family and friends tell me they are going to … to recommend them to see the news and have a second thought about their trip. And I will do some research about what is happening. (Interview 1, Participant 3)

> If the UK government are considering a travel ban then perhaps you would … I mean I get the impression that it's quite bad and be quite … I feel quite reassured that they're taking measures to contain it. (Interview 5, Participant 2)

Further concerns around travel emerged in the context of London as a global city with a higher associated risk of infection.

> Living in London probably puts us at some kind of risk 'cause there is lots of global travel with Heathrow and Gatwick here, and so many people. It probably puts us at some kind of risk but not anything imminent or anything to worry about too much. (Interview 1, Participant 4)

> Exactly. Plus I have friends that are from Greece so that's one of the first things that comes to my mind. People at universities are … and this is a multicultural community, there are people from almost any country here, so we are at high risk. … …I mean the probability of someone being ill is much higher than probably in a small city that not many people travel too, like some small village in England. (Interview 7, Participant 4)

The reference in the scenario to the 1918 Spanish flu did not seem to prompt great concern around risk or vulnerability. Some individuals indicated the comparison was unsettling but the general consensus was that, over the past hundred years,

medical science had advanced considerably rendering the comparison much less concerning.

> Yeah, the comparison to Spanish flu is, I suppose, a scary one, but then considering that was one-hundred years ago you tend to assume that medical science has evolved somewhat. (Interview 3, Participant 1)

> I'd say there's nothing much that we can do at this point because there might be chances that UK people would get affected in the near future, but I think that our medical technology nowadays could probably find a fix to it a lot sooner than when it was in 1918, so I don't think there's much that we can do but I would also pay attention more to people who are coughing or sneezing around me, just to stay away. (Interview 6, Participant 2)

In addition to medical science advances, one participant also highlighted advancements in hygiene conditions since the Spanish flu.

> I guess I'd probably be a bit worried. Probably check the news every day but I do that already now so it's more just regular keep up with doing that. As to the seriousness of it, It does seem that it could be as bad as Spanish flu, which is really bad, but then again conditions like hygiene conditions back then and things like that probably weren't as good as it is now so I probably wouldn't be that worried. (Interview 9, Participant 1)

A few participants indicated that they would be more inclined to engage in information seeking behaviour, even if they were disinclined to alter their day-to-day lives in any substantive way.

> I don't think I'd do anything different actively, but I do think if I were … so mainly I'd probably listen to the news through the radio. I'd probably just … my ears would be more attuned to listening out for that but I don't think I'd then go away and Google it and find out more. I think … I don't know, I think maybe if it is really important it will … be reported and the more frequently it's reported, the more then I will listen and think OK, this is serious. But I don't think I'd actively do much different. (Interview 1, Participant 2)

> I didn't feel that vulnerable but I felt slightly at risk and risk of getting infected by it and also I thought that, my immediate thought was that I should follow the news about this influenza more frequently and try and find out more information about it. (Interview 9, Participant 3)

7.4.2 Stage Two: Pandemic is Declared

Stage Two of the scenario prompted greater concern than at Stage One, as the presence of the flu in the UK indicated a more proximal threat.

> Also, because it's in Britain now, so it's like… before when it was in Greece, I was like, 'Oh, that's fine,' but now it has spread to Britain, then you know you definitely could get it, potentially. (Interview 2, Participant 3)

> There are casualties, actual deaths and the figures and it's also affected the UK so it's not just a problem in Greece, it's something that's already happening in the UK and the fact that someone in London died, it's the whole proximity thing so it could happen to any one of you. (Interview 8, Participant 1)

Living in London continued to be viewed by some to be a risk factor in, and of itself.

> I definitely feel like if I were in a city like London where everyone is on the tube, touching stuff or, you know, breathing the same air in an enclosed space or just going down Oxford Street for example, just all these things would make me feel very nervous about … like I said, we don't know … where the 5,000 cases are, what if it's the person that's next to you on the tube, I feel very unsafe in that sense. (Interview 3, Participant 4)

> I think I'm at a high level of risk compared to other people in the UK because whether there's more airports and more travel as well so a higher risk of spreading the virus. (Interview 9, Participant 2)

For many participants, the fact that fatalities had now occurred resulted in a greater sense of risk than before.

> I think this time I'm a bit more alarmed because there have been reported some deaths from the influenza, so I would be a bit more alarmed than reading the first newspaper article. I'd be more scared about it. (Interview 2, Participant 1)

> I think that somehow 12 fatalities sounds a lot more menacing than 5,000 British cases of the flu, so the former makes me somewhat worried, the latter just makes it more distant. (Interview 3, Participant 1)

For some this concern was exacerbated by the reported death of an otherwise healthy young woman.

> Yeah, like the fact that it's in Britain now and also that… because at the beginning I was thinking, 'Oh, I'm a healthy young person, it won't affect me,' but then they put in the story of a young, healthy woman in my demographic, that got the flu and died, so that's really worrying. (Interview 2, Participant 3)

> Probably a bit more worried than the last article since it's in England now and also the case with the 24-year-old and she's in London. So that would be more worrying, especially because she was completely healthy and a young adult which means she should be one of the more healthy people in the population and she's died from it. I think that would be quite worrying for me. (Interview 3, Participant 4)

However, others questioned whether the victim was actually 'otherwise healthy'.

> From that woman who got it and died, yeah, I'm thinking more now that I'd be at risk but again, I'm still thinking not as at risk as other demographics, like immune compromised people, old people, babies. (Interview 2, Participant 3)

> I agree. I think this particular case is worrying but not alarming. Like I said, it says that she was healthy and everything but we also don't have all the information. It

> could be this was just one case and that's why it's hard to gauge if it's something that might happen to me, or if it just happened to her. (Interview 6, Participant 1)

Furthermore, others were reassured by the relatively low mortality rates.

> I think it's almost reassuring in a way, the fact that so many people have been affected but not that many, fortunately, have died, it does show that we do have good treatment or ways of managing it, so although it's a scary concept it doesn't feel like it's something we can't manage at all. (Interview 2, Participant 2)

> I think I would be more concerned just due to the geographical proximity 'cause they're saying someone in London has died but at the same time the ratio of deaths to those who actually get infected is really quite low. So I think I would take measures but wouldn't be – I don't think I would change my lifestyle too much in response. (Interview 5, Participant 4)

For some participants, despite the targeted fatality and presence of the flu in the UK, their perception of risk remained comparatively low.

> I don't think I'd be at risk more than anyone else really, I think I'd probably have equal risk with most people to getting the flu and substantially less risk of dying from it. (Interview 3, Participant 1)

> Yeah, more at risk but slightly … 'cause before I pretty much wasn't at risk at all, so the risk is still low, very low, I feel like it is for me anyway. (Interview 5, Participant 1)
> I think it's just like the terror attacks. Like if it happens to you then you're just really unlucky. You can't really super prevent it I guess, you can avoid crowds, but … (Interview 5, Participant 3)
> All it takes is a tiny droplet or whatever getting on you, so you can't live in a bubble. If it happens, it happens. (Interview 5, Participant 1)

This lower perception of risk was attributed to the sense that the scenario would still be unlikely to have a direct effect on their lives.

> I wouldn't really think about risk unless my best friend has it, or my family member, I feel invincible… …That's just how I feel about everything, I never feel like… I'm going to be affected by risks. It's a bad attitude probably. (Interview 3, Participant 2)

> So I feel like even though there are 12 fatalities, one based in London, I feel it's not like a huge deal. If it was at my university, at Kings, then I would probably be worried but other than that London's such a large place it could literally be anywhere. (Interview 4, Participant 6)

Participants identified additional factors such as lifestyle and vaccine development as influencing their perception of risk. The close quarters in which many students reside was identified by few participants with one commenting specifically that risk

due to environment would be much less concerning than risk due to inherent characteristics.

> Yeah, if you think about freshers' flu over the last few weeks, I think nearly everyone I know ended up with freshers' flu, it spread really quickly, so something like this, if it did come to the uni or anything, I think that would spread quite quickly too. Being in London … puts us at risk, but there's always a level of risk. (Interview 1, Participant 4)

> Yeah, I'd definitely ask why, I wouldn't take it at face value because it runs against broad consensus about vulnerability of certain groups of people. And it might not be a biological reason that we are somehow more vulnerable but it's just that maybe 24 year olds and younger people tend to go to high density places more often, so that's not a problem with me personally but something I can do something about. But I would definitely be wondering if it's somehow biologically younger people are pre-disposed to contracting this more, that would be… but I would … the concept that were presented to me in the first place, but if they were true I think it would be a lot more alarming. Yeah, because if it's about young people going to high density places that's something I can do something about it. (Interview 4, Participant 1)

A few participants also identified concerns around agricultural risk and food safety.

> Definitely more alarming. There's a chance that it's going to spread even further, because I think in this country there are a lot of lambs, 'cause it's ovine flu, so potentially it might get quite big in this country, so it does feel alarming after reading this. (Interview 6, Participant 2)

> I think even though I have the same demographic, pretty much composition as her, profile as her, I wasn't super-bothered just 'cause it was one individual, but what bothered me more was the infected lambs in Greece because there was a mad cow disease outbreak in the States and so that's what I related more to with food, like oh, the E. coli outbreak … what foods should I be avoiding, what things should I be avoiding versus this woman just had bad luck it seems. (Interview 7, Participant 6)

Finally, the timeline for development of the vaccine, in particular the gap between a pandemic being declared and the vaccine being made available increased perceptions of risk or susceptibility amongst a few participants.

> I think there are several words in your article that would if you would like to be really afraid, like the WHO, 'cause it's like a really big organisation, the word pandemic, also the case of a girl 24 years that is mostly our age, and about the vaccine – they say they are going to take it until May so the news is for January so there are still five months until getting the vaccine so there will be people that it's going to be not really useful, because they will be already dead. So yeah, it's scary. (Interview 1, Participant 3)

> It seems like the vaccine's only in May but now it's January and it's kind of far away so probably by then it would have died down and I would say I feel more susceptible to getting the flu but I don't think I would die from it, so … probably a

> little bit more concerned but not overly concerned about it. (Interview 7, Participant 5)

7.5 Behavioural Intentions

7.5.1 Hand Hygiene

Handwashing was supported by nearly all participants as an effective way to prevent illness, though rationales provided to explain this varied somewhat. A few participants felt it would be an effective protective behaviour as it is a currently recommended public health practice.

> That's what we've been told. (Interview 5, Participant 4)

> Having been in hospital environments it's really something that they stress so much that I'd feel well it's really important, not cure me but … to prevent. (Interview 5, Participant 6)

Other participants identified touch as a potential mode of transmission of the illness and therefore, supported handwashing as a means to reduce the likelihood of infection.

> Because you put your hands in your mouth and if you've got dirty hands then the stuff that's on your hands goes into your mouth and it could get into your body that way I suppose. (Interview 5, Participant 1)

> Because when I think of an illness that just the first thing that comes around is that if people get it through your hands, so I just do that, to wash my hands to at least try to … yeah. (Interview 9, Participant 3)

The use of public transit was specifically highlighted as a potential impetus to handwashing.

> I think I might start washing my hands more after using public transport and also do some research online just in case, because you don't know who's been back from Greece and got infected, they might carry something, so I guess I would start to be a little more hygienic after going out in public. (Interview 1, Participant 3)

> I might be more careful, like washing my hands a bit, like after going on the tube or something, try to keep myself to myself, not touching lots of objects! (Interview 2, Participant 3)

Consequently, handwashing was viewed as an effective way to kill bacteria and germs that might cause illness.

> Always have a feeling that it kills bacteria even though I know that not always it does but … it's just you want to wash your hands if you're after the tube or using public transport in particular, you just … you know that you don't want to then

> cook food and you are touching … on the tube and so on. (Interview 6, Participant 4)

> Wash their hands! … …People touch everything <laughs>, like I'm touching this pen, you might need to borrow it, it's just germs are … most contact goes through hands, and doors, people don't clean door handles but everyone's touching every door handle that you can find.(Interview 7, Participant 6)

Whilst the majority of participants were in accord over the effectiveness of handwashing as a protective health behaviour in general, a few participants were doubtful about its specific usefulness in preventing flu.

> I think hand washing protects against a lot of things. This flu … I'm not quite sure. But I think it's just generally good practice to, for your health anyway, 'cause if your immune system's already compromised then if you did come near someone with the flu I think it would increase your risk of being infected. So I'd encourage hand washing. (Interview 1, Participant 4)

> Even if it doesn't though, it's relatively … low-cost measure to take. It doesn't take much more effort to wash your hands a bit more, and if it does stop it then great, if it doesn't actually make a difference you've not really changed your life drastically to prevent … (Interview 5, Participant 1)
> …I agree with what you said, low cost, you don't wanna get the flu and go, 'Damn, I should have washed my hand, like that was so easy.' (Interview 5, Participant 4)

A few participants also highlighted handwashing as a non-challenging or non-disruptive behaviour to adopt, particularly for students.

> I think it's [handwashing] probably the simplest way to tackle this problem, I mean telling students to again, stop socialising or stop going out would be a big problem because most of the time they wouldn't even respond to that or even follow that advice, but probably more advice which looks at the health thing, so clean your hands and so on, would probably be the best way. (Interview 2, Participant 1)

> Well, unless a pandemic gets so bad that 1,000 people have died in London, then definitely, but if it's at the stage that we read about I'd probably go for the easy things. That would be more like wash your hands, make sure that you drink lots of fluid and stuff like that. Stuff that's in general. But not drastic behavioural changes on my part. (Interview 5, Participant 2)

Financial costs associated with handwashing were, for the most part, deemed to be negligible and not considered to pose a barrier to adoption of the behaviour.

> Yeah, although again, like hand sanitizing gels would be pretty cheap. (Interview 2, Participant 3)

> Yeah, there's like literally zero cost in washing, like you just go and press it. (Interview 4, Participant 1)

Despite this, a few participants did suggest uptake of handwashing (via the use of hand sanitizer) could be increased if free samples were provided.

> Maybe like a way the government could, as I say, I don't know, give hand sanitizer to unis to distribute or something…. …If it's free you want to grab it! (Interview 2, Participant 2)

> I'm just thinking, university gives out a lot of freebies so when you give the students free hand gel I think they would use it. (Interview 9, Participant 2)

Although the prevailing sentiment was that the financial costs would not prove a deterrent to handwashing, one participant expressed the opinion that the prevalence of pay toilets could discourage use.

> The bathrooms … they charge for you to use the bathroom in this country, so the public bathrooms, you have to pay 20p or something to get in. It's kind of like deterring people to use the bathroom anyways, I think. (Interview 6, Participant 2)

Accessibility, or availability, was seen as both a deterrent and an encouragement depending on whether the focus was handwashing (sink and water) or use of hand sanitizer. A lack of facilities or knowledge as to location was viewed as a potential deterrent to traditional handwashing.

> Convenience, they'd have to be near a sink or somewhere with soap or with hand sanitizer. (Interview 3, Participant 1)

> You don't know where the toilets are in this building, I guess, like if you're new to a building, your lecture changed… (Interview 5, Participant 4)

Infrastructure challenges in public washrooms were highlighted by a number of participants as potential barriers to hand washing. One recurring complaint was around a lack of soap.

> And sometimes they don't have soap. … …They just put water when you really can take out the germs with soap. (Interview 6, Participant 3)

> No, I think the sort of only barrier would be like if you're on a train, a very dungy train or like a bus and the toilet there doesn't have soap, for example, then you have to just compromise and just not wash your hands with soap for that one time. (Interview 8, Participant 2)

Additionally poor bathroom design could disincentivise handwashing.

> Yeah, and the same thing, I think some of the taps here are like ridiculous and hard! The faucets! You boil your hands when you wash! (Interview 6, Participant 2)

> I think although people try to wash their hands, there'll always be some possibility or there will always be a situation where they touch the door handle so … this

> would be much more, for me to wash the hands to prevent myself. I don't think I can prevent the door handle from being not covered with germs. (Interview 7, Participant 4)

Conversely, the portability and perceived general availability of hand gels was considered to enable handwashing.

> I always have a hand gel and wet wipes with me, just because I'm always out and touching things and probably I'm at the point like I'm in the middle of the street, I don't have access to a hand wash like bathroom. (Interview 4, Participant 5)

> They have those things in a school at Southampton, my friend's primary school the other day, 'cause she's a teacher there and throughout the whole school they have those things which are also in the NHS, put the hand out and they have the anti-bac, and I'm like … you just need that everywhere. (Interview 7, Participant 2
> We had it at my undergrad university as well and it was very much a common thing to just do it before you went into class or if you were leaving class. (Interview 7, Participant 6)

Some participants also expressed the view that time or effort costs could deter people from handwashing.

> Some people are just lazy. (Interview 4, Participant 6)

> Just as maybe they don't do it properly because it requires… like you need to do it for 20 seconds, singing happy birthday twice, something like that. Yeah, I don't know, that is some way and maybe people just don't have time and can't be bothered to do this when they go out of the toilet and they have to rush that. (Interview 4, Participant 3)

A few participants indicated the need for people to develop the habit of handwashing.

> I think it's a habitual thing because most places have soap and have water, so even if you don't have soap you can probably wash your hands. I think people who don't wash their hands it's just because they're habitually not used to it. (Interview 4, Participant 1)

> Also habits, so if you're not used to thinking about it you might find it really hard to drill it into your head every time you go out. You need to wash your hands…. (Interview 5, Participant 6)

Finally, social pressure was acknowledged as a potential motivator to encourage handwashing both through creating opportunities and stigmatizing negative behaviour.

> I carry a little bottle of hand sanitizer but I took it out of my backpack. I may even put it back in! It's very easy. Or maybe someone else, like my friends take it out and then everyone else wants some. If one person does it then lots of people will. (Interview 3, Participant 3)

> Sometimes some people don't … doesn't have the same awareness to for example diseases or something like that, so therefore they don't take actions that you expect them to do. But if that's the case then I think that you should just …because since this is a really serious issue then you should just let them know that what they are doing is not right. Because it's the health of all the public. When it was in…if it is not that important they should not be that assertive, but if it's a really widespread flu then I would be … assertive around just trying to be more cautious. (Interview 9, Participant 3)

7.5.2 Isolation

Participant responses to the idea of limiting social contact during a pandemic were somewhat varied, though the majority did not feel this was a behaviour they would be particularly inclined to adopt. Participant responses fell along a continuum between willing to avoid all but necessary outings and those who felt the benefits of staying home did not outweigh the need or desire to go out. At one end, some participants felt that the risk/reward calculus to staying in did not favour isolation.

> I wouldn't do that. I think ultimately you can … I have lived with flu in the same house as other people who haven't got it, and maybe it's just because I don't know enough, but I really don't think it's as simple as if you do this, or if you avoid this … I don't think it would be worth the hassle of changing my pattern to that extent. I think we just don't know why some people will get flu and why they won't, and maybe that is a simplistic answer, maybe it's because I don't know much about the science behind it, but I don't think it would ever cause me to stay in or go somewhere specifically. (Interview 1, Participant 2)

> Because it's too much effort. There are little things that you can do but limiting places that you go is really going to affect my life significantly so … it's too much to ask. The trade-off is large then I guess for what you get out of it. (Interview 6, Participant 4)

At the opposite end, a few participants indicated they would severely limit their external activities and refrain from going out unless required.

> I would cut down travelling drastically, only go to class. I wouldn't go out for fun. I'd go to class, buy some necessities and go back. (Interview 1, Participant 1)

> Yeah, I think I would, well, not go out, I wouldn't completely stay at home but I'd try to limit the timeout and stuff like that, so not go out that often and just cut it down a bit but not completely stay at home. (Interview 8, Participant 1)

Most participants fell somewhere in the middle, being prepared to accept some limitations but not many.

> There's ways… like probably go out once or twice a week rather than three or four times a week would be realistic or just like if you're not set on going out then stay

> at home instead but I don't… if you've got stuff planned you don't want to… (Interview 2, Participant 3)

> It depends where. Like I said, going down Oxford Street I'd avoid but going out with my friends to a pub… I don't know if that's really reasonable. (Interview 3, Participant 3)

Avoiding crowded areas was also suggested as a way to minimize potential exposure to the virus.

> I would, like, avoid the crowds and stay inside, stay at home more. Try to get less contact with people because if I'm more vulnerable to the disease that this is, so walk to work might be a good choice and also take care of my sanitation, hygiene and stuff, and also I would search the internet and look for how to prevent flu or something like that. (Interview 5, Participant 7)

> I wouldn't go to Oxford Street that much. … …There are so many people there! It's one of the most congested streets in London I guess! (Interview 7, Participant 5)

Likewise, a few participants identified public transit as something to be avoided.

> It's just that if I noticed that I was really tired or maybe I felt a bit unwell, other days I might have come to the university but if I had just read this I would be like oh maybe I should stay home just to make sure that I don't have something that would be contagious for other people, or I would use public transport less, if it wasn't necessary I would prefer to walk instead of being in crowded places. (Interview 4, Participant 3)

> I think I would avoid taking the tube for example, but in general I don't really like taking the tube 'cause I feel like it's very closed, it's very closed environment … I feel like these kind of things can spread more easily for some reason. (Interview 5, Participant 5)

For many participants, isolation was not viewed as feasible due to unavoidable commitments such as work or university, and social pressures.

> Things like commuting at peak times, if you've got a job or something you can't really be like, 'I don't wanna come in at this time because I don't want to be on a busy train.' Your boss isn't going to be like, 'Yeah, that's fine. Just come in whenever!' Or at least my boss wouldn't be. She'd be like, 'No, we're busy. You need to come in.' So I don't think I'd stop. I think I wouldn't just pop out for the sake of it. If I was really worried I wouldn't be, 'Let's just go out' but if I had plans or at work or uni I wouldn't not go. I'd still go. (Interview 5, Participant 1)

> I think I would only change my life if it didn't really affect the fundamental parts of my life. Like I'd still go to work, I'd still go to school but maybe I won't go out on a Friday night … to a club, but I'd still go to a restaurant. (Interview 5, Participant 4)

University, in particular, was frequently cited as an unavoidable commitment for many students. When asked about the option of using Lecture Capture or a similar

system, participants were divided. A key factor was whether they find they learn better in the physical classroom environment.

> I definitely learn better when I'm not in the classroom so I would probably be on Lecture Capture. (Interview 5, Participant 6)

> For me, I just can't learn through lecture capture… (Interview 5, Participant 4)

A few participants also indicated the perception that the risk of flu would be fairly minimal and not worth the sacrifice of missing classes.

> For me it would be balancing pros and cons as to the pros of going to classes and getting that one-to-one contact with the professor or teacher, and seminars especially … I have many, many seminars, I think it's more worth it, more value to me going to class than the risk of me being affected by this flu, so there are more pros to going to class than not, and the risk of illness is so small that it's just in the end more worth going to class. (Interview 7, Participant 3)

> And also, people get the flu all the time, I'm not … what's the worst that's going to happen? I'm going to get the flu. More likely than not I'm not gonna die from it, so I would be willing to take that risk, like you said, to ensure that I am getting to class. If there was another email that said we strongly discourage you … they're not gonna say 'We discourage you from coming to class' but if they're like, 'We're really OK if you don't come to class' then I would consider it. If they're that worried about me not coming into class, then maybe I should consider not going. But otherwise I would probably continue to go because to me it's like what's the worst that's going to happen? (Interview 7, Participant 6)

A few participants identified social pressures as a deterrent to staying in, particularly not wanting to present an image of being scared.

> I'd fear … not judgement per se but maybe the perception that I was over-reacting if I didn't go – that's the reason I go if I'm going to lectures, maybe that's one reason in reality! If I gave people the idea I'm worried about this pandemic … I feel like they just … it would be quite funny … you know … (Interview 7, Participant 3)

> No, I don't think I'd sort of limit myself socially because it's just the way I see this is just like… it's like anything with terrorism as well, like just because nightclubs are being attacked doesn't mean you don't go out anymore, right? So I think the same thing as well, if there is an epidemic going on then just be more careful when you're going out but I wouldn't change a thing. (Interview 8, Participant 2)

Willingness to self-isolate was increased when participants were asked if they would stay home when ill. Most participants indicated they would, for a mix of reasons including personal wellbeing and minimizing potential spread,

> I think if I was unwell my decision to stay somewhere would probably be on how I was feeling rather than the issue of other people, which I don't know maybe sounds a bit selfish … but I'd … yeah, I think I just wanted to specify that, that it

> would be … I wouldn't not go somewhere because I thought I could catch flu there, but yes, if I had flu then that would probably … probably just be out of my capacity to function enough to get out. (Interview 1, Participant 2)

> I agree with that. I think I would just try to build up my immune system with like multivitamins, like ColdFX, I would stay home if I felt unwell, 'cause normally I go out and just power through it, but I think I would stay home if I didn't feel well and I'd also avoid unnecessary crowds. Like I wouldn't stop my regular life, but if I was … I wouldn't book to go to a really crowded concert or something… unless I really wanted to see them! (Interview 5, Participant 4)

However, one participant did indicate intent to continue on as usual if at all possible.

> Well, this is gonna sound bad, but if I'm ill I'll still want to go to my lectures and classes, I'm not going to just stop going. If I'm not gonna die I'll still go, irrespective of the risk to other people. But if it was dangerous and you hadn't got it but there's a good chance that you could catch it if you went to campus then maybe stay at home, watch your lecture online, don't go to classes and just try and do stuff on your own. I think that might be an easier way 'cause you can do most of the course at home anyway if you really had to. (Interview 8, Participant 3)

7.5.3 Respiratory Hygiene

Participants were generally supportive of the employment of good respiratory hygiene practices, or cough and sneeze etiquette.

> And I think I read a statistic somewhere where if you sneeze on one end of a tube the bacteria or the germs can get to the other side of the tube. So if you did manage to catch the pathogens in some kind of way it would be better than … like even if you sneeze into your hand I feel like they could still go into the air. (Interview 1, Participant 4)

> It's logical to think that doing it into a tissue is better than spraying it out into the air. (Interview 5, Participant 1)

Discrepancies arose however, during consideration of the best method to use; hand, tissue or elbow (sleeve). A few participants felt that using one's hand to cover a cough or sneeze could, in turn, spread the virus when that hand then touched something else.

> That [using a tissue or sleeve] definitely would be better than the hand washing, because you are having a barrier to the virus to the other side, otherwise you'd be using it in your hand and you're like sticking on stuff, so yes, that would help. (Interview 1, Participant 3)

> I think I agree [that most people in the UK cover coughs and sneezes] but then the danger is that people do that, maybe they'll use their hand but then what do they

> do? Oh they go and open a door or they go and touch a handle and then the problem continues anyway. (Interview 8, Participant 3)

A few participants indicated they would use their hands though one indicated this due to a lack of tissues at the ready.

> I just cover my mouth with a hand. I never use the sleeve. (Interview 7, Participant 4)

> Guilty of using my hands. Probably just try to bring a tissue more! (Interview 9, Participant 1)

The suggestion of 'sneeze into your sleeve' was met with two distinct, but opposing responses. Those against expressed concerns over perceived hygienic risks associated with this behaviour.

> But I think it's easier to wash your hands than it is to wash your sleeve. I think the infection will stay around longer, potentially… if you're diligent … if I sneezed I think the chances are I would then go to wash my hands, whereas if I sneezed into my sleeve then that could be easily there rubbing off on other things. It's much harder for me to go and put my sleeve under the sink. (Interview 1, Participant 2)

> I think everyone does that anyway. I don't know if that's just … everyone does that anyway so I don't think it's really … I think people just need to be reminded. Say if I sneezed on my jacket, I'd be so … worried about it the whole day that I'd have to go and put it into the wash! So I prefer the tissue idea 'cause that way you can actually bin it and kill it, rather than killing your jacket! (Interview 7, Participant 2)

In contrast, those who were more positive about this suggestion felt that 'sneeze into your sleeve' was an effective way to prevent the spread of illness.

> Also a lot of people cover up with their hands and then go and touch things, so then it's not actually super-effective in not spreading it. It's better to cough into your elbow but lots of people don't do that and then … yeah. (Interview 3, Participant 4)

> I think it's quite easy to do. I use my sleeve just 'cause I don't remember to bring tissues, but … people often don't do that because they think it's gross but it actually dies just as quickly, the germs. (Interview 7, Participant 6)

Several participants expressed the view that a social norm exists and should be supported around adequately covering one's mouth to cough or sneeze.

> I feel it's weird if you don't cover your mouth if you sneeze or cough, like a tissue… I don't always have them on me but if I feel like… I will carry tissues around to catch it and stuff. (Interview 2, Participant 3)

> I think peer pressure would be very effective, in that sense that if you cough into your hands and two people or three people are around just looking at you, 'What are you doing? We can all get sick because of you!' I think that would be very … I

> think peer pressure and social responsibility very important with that. (Interview 3, Participant 2)

Several potential challenges or barriers to respiratory hygiene were identified by participants such as the need to have tissues on hand. While, by no means insurmountable, this challenge requires people to remember to re-stock and carry them, particularly when they go out.

> I think it's probably a bit more inconvenient than washing your hands because you need to remember having a tissue around. I usually carry a pack with me but if I'm ill and I have to continually bring it along with me I might forget or something, because I don't usually use it a lot, so it's like an occasional you feel kind of thing. I think it might be a bit more inconvenient than hand washing. (Interview 4, Participant 1)

> I'd just make sure I had tissues on me. I'd just buy extra supplies of them and … just be more aware, especially on public transport. (Interview 7, Participant 3)

Participants also mentioned the related challenge of accessibility suggesting that public areas could be better stocked with tissues or provide them free of charge.

> Yeah, I think they could. Maybe in this event having a more plentiful supply of tissues kind of around hallways or something like that to just make you constantly see them, you're constantly aware, and if you ever need to sneeze and you've not got any tissues on you, you know there's going to be some that aren't too far away that you can go and get. So I don't think tissues would be too much of a problem. (Interview 8, Participant 4)

> Yeah, I agree, like just provide basic tissues just the way you provide sexual health products type thing, you just give it out for free or make it widely available would be good. (Interview 8, Participant 1)

A further challenge identified by participants was the spontaneity of coughs and sneezes.

> I don't know, I guess because sneezing is a spontaneous thing, you don't always know when you're gonna need a tissue. But it is sensible to just have it anyway and maybe if it was … regarded as a really sensible, wise thing, and necessary thing to do, I think that would be very easy. (Interview 1, Participant 2)

> Yeah, especially coughing is a bit difficult to do with a tissue because it just… sometimes they come and you don't have time to get up and get a tissue but definitely sneezing. (Interview 2, Participant 1)

In discussing respiratory hygiene behaviours, cost was not frequently mentioned however, when referenced, participants disagreed on the potential for financial cost to be a barrier to action.

> I think it's quite hard to change ingrained behaviours like that especially around students. They like to penny pinch on things like tissues, so … I think if they don't already, it's going to be quite difficult to get them to start doing that unless you're actively giving out things like tissues. (Interview 3, Participant 1)

> And again they're low-cost measures to take, so if they do work it's great, but if not then it's like well, it's a shame but … could have been worse. Kind of at least I didn't stop going out and still get it or … (Interview 5, Participant 1)

7.5.4 Seeking Medical Assistance

Most participants indicated that they would seek medical assistance if they were ill during an influenza pandemic. Participants who expressed a reluctance to seek medical assistance usually did so from a sense that there wouldn't be much the GP could do to assist with flu.

> Especially with viral diseases, not much you can do. (Interview 4, Participant 3)

> If it wasn't too serious, if it was like similar to flu then I wouldn't bother going to the doctors or doing anything, I'd just stay at home. But if it was then I'd have a look, I'd do some research and see what the NHS is saying you should do, because it might just be the case that they're saying, 'Just isolate yourself, there's not really anything that we can do for you'. 'Cause a lot of these cases, when people go into the doctors and they go, 'Oh I've got the flu', they go, 'Oh, that's not very good for you but we can't do anything for you, we've got nothing for you', and so usually you go home with nothing. So you'd look at what they said that they would do. If they said, 'We can offer you this that will relieve symptoms', then maybe I'd go in and get it, but otherwise I would stay at home. (Interview 8, Participant 3)

Disinclination to seek medical assistance was also influenced, to a lesser extent, by convenience.

> I'm lazy (Interview 4, Participant 6)

> Depends. Not the biggest fan of doctors. I won't go to the doctor's unless I'm really, really ill 'cause the wait in the hospital and everything is just too much effort. (Interview 6, Participant 2)

Participants who expressed intent to seek medical assistance tended to cite symptoms, severity and/or duration as the driving factors behind their decision. If the symptoms an individual was experiencing matched those connected to flu, the participant would then feel inclined to seek medical assistance.

> I think I'd probably read up on line medical symptoms of the flu before I summoned assistance, but if they matched then probably. (Interview 3, Participant 1)

> Yeah, I think so. It depends how ill I was. If I was ill and I looked at the symptoms and they correlated with these symptoms, then yeah, I'd probably go to the local GP, although that in itself might be a bit of a challenge because my local GP would be back home, in northern England. So I'd have to, I don't know, sort out registering for a temporary drop-in session in London or going back up home to the GP and getting checked there. (Interview 8, Participant 4)

Furthermore, if the illness was present for more than a day or two, participants indicated their intent to seek out medical help.

> It depends what it is, 'cause isn't there quite a lot of strain on the A&E already, so you're not going to go there if you've got like a common cold but it depends how long the symptoms persist for. So if it was more than three days then maybe go see your GP. But other than that I just think a flu is a flu. (Interview 7, Participant 2)

> For me it would also be self-medication for three days, to look whether that actually impacts my health and if it's better then I just don't worry about it and if it wouldn't get better I'd probably visit the doctor. (Interview 7, Participant 1)

Lastly, if there was a perception of severity (either in the individual case or the general health environment), participants were more likely to contact a medical professional.

> Yeah, I think the same as everyone else, check the symptoms and wait a day or two, but if it gets really serious I think like if an epidemic happens, usually there's usually hospitals have got special sections and things, and if you think you have SARS just come in here so it's contained. (Interview 8, Participant 2)

> I usually don't go to the doctor unless it gets very serious, I don't visit the doctor. (Interview 7, Participant 5)

Participants were not generally in favour of A&E as an initial medical resource, with the GP and 111 being the most referenced sources of help.

> I'd go to my local GP. (Interview 4, Participant 2)

> I would probably call 111, 'cause I do that a lot <laughs> and ask them because I think that going to the GP takes too long, like often you have to wait a week or so to get an appointment which I find frustrating, so calling 111 is quick and easy. (Interview 7, Participant 6)

Whilst only mentioned in one group, pharmacies were also cited as a well-regarded source of medical information and assistance.

> I feel like pharmacies are also becoming the new thing as well. My parents recently, 'cause they're over 60 or 50 and the whole flu jab is now recommended, they got their flu jab from the pharmacy. So I feel like the pharmacy is becoming like a second medical outlet in the UK. (Interview 7, Participant 2)

> Certainly advice giving, very, very useful. I always ask someone, they have great advice and know what exactly I need. Replacement for a GP sometimes even. (Interview 7, Participant 3)

Ease of access was identified as a potential barrier to seeking medical treatment, with long wait times acting as a deterrent.

> … yeah, whenever I call the NHS or whenever I went to the hospital it made my case so much worse than when I tried to self-treatment. Because they had me standing in the line for like two or three hours and then I didn't even see a GP, I saw a nurse and she said, 'Well take this leaflet and go home and do whatever it says.' So it wasn't helpful, and the same happened when I called them and this happened twice, and then the third time I decided just to self-treatment and it worked fine. (Interview 4, Participant 3)

> I would probably go to my GP or call them and 'Got the flu!' They'd probably be on high alert shouldn't take like three weeks like it normally does! (Interview 9, Participant 1)

Some participants also discussed a reluctance to go to a GP office out of concern around contagion.

> But then doctors' places don't want people to go in with flu a lot of the time because then it will spread to other patients. So I'd be thinking about that, I'd be like, 'Oh, do I really want to go into a place that has loads of ill people and the flu,' so I'd feel a bit bad going. (Interview 2, Participant 3)

> It depends what they're recommending you do. A lot of times in things like this they're like, 'If you think you've got it, don't go to your GP,' because you're gonna be around other people who are ill, so if everyone that thinks they have the flu or whatever goes in and one person has it, they could potentially just spread it to everyone else in the room who might not even have it. So it depends what they're recommending we do 'cause a lot of times they just say stay home and ride it out unless you've got other health complications, or ring an out of hours doctor or – (Interview 5, Participant 1)

When asked about the National Pandemic Flu Service, participants were supportive of the existence of such a program and its ability to provide an alternative to existing medical infrastructure (largely GPs).

> Yeah, and there'd be such a strain on the already strained resources, so if they added an extra facility it would take a lot of the pressure off [GP]. (Interview 5, Participant 1)

> Yeah, definitely. If I get flu then I didn't know there is something like that, so when I get the flu first of all I would just call that line, and ask them if … ask them if I had flu or something and they would probably make me go to my GP anyway. So I would first do that and after just … go to them. And that would be a really good source of information as well, even if I did not have the flu I would just check that site. (Interview 9, Participant 3)

Most participants indicated they would prefer to access the flu service via the website option. In some cases this was due to a dislike of using phones.

> Maybe if they're more than just phoning though, maybe like texting as well, 'cause sometimes you don't want to pick up the phone. (Interview 2, Participant 3)

> I hate talking to people! (Interview 6, Participant 2)
> Me too! (Interview 6, Participant 3)
> Yeah, probably you're on hold for 45 minutes before you can get to someone. And you need to explain a lot and it's just annoying. (Interview 6, Participant 2)

Several participants indicated that they found websites to be more convenient.

> And they should be like an online thing that you can sign on for 10 minutes, if you don't want to go (Interview 2, Participant 1)

> It's really convenient if it's a website because you can do it from anywhere, you don't have to move, you don't have to interact with anyone. (Interview 4, Participant 3)

Additionally, some participants felt the information on the website would be more precise and/or consistent than the phone line.

> And it's like very specific, it's targeted exactly to that pandemic flu and so all of the information available on the website is what someone who's curious, you know about the pandemic flu would need it. (Interview 4, Participant 5)

> Sometimes I feel like the websites are better than people as well. And that's because everything's in black and white, so for me it's like it can't go wrong because otherwise people would be suing them right now. I just feel like 'cause it's in writing it's just more concrete, the advice. (Interview 7, Participant 2)

While the majority of participants expressed a preference for the website, a few individuals indicated they would prefer the phone as it provided a more interactive experience.

> I think website is not a real person confirming for me. I often need that confirmation, I'm not a doctor, I can't diagnose myself but if I'm on the phone and I'm getting advice from somebody else and they are a health professional then they can oftentimes affirm if I think I have something, whereas a website can't do that for me. (Interview 7, Participant 6)

> 'cause I guess it's just you wanna talk to someone … I mean unless you're saying it's online in the sense that someone types you a response, rather than just a series of questions that are tick-boxes. So basically I want someone, an actual person, to tell me what I should be doing. So if it's an email then that's fine but if it's a phone call versus an automatic machine or computer-generated system then probably phone call. (Interview 9, Participant 1)

Although the use of a phone line was preferred by some participants, others identified barriers which would limit or preclude their use of this medium. A few participants expressed worry around imposing.

> Sure. I think if … I would only talk to the person if I couldn't find something that I could read online, 'cause if it's too obvious I would probably be like, 'I don't wanna waste your time anyways.' (Interview 6, Participant 2)

> Yeah, it's just like calling in just to ask a few things, you feel like you're bothering someone for something that's not serious. Unless it's something that's really serious I'd phone, but most likely I'd just use the website. (Interview 8, Participant 1)

Several participants also brought up the challenge around efficiency and potential wait times to speak with someone.

> And if you are just calling, 'cause you might end up in a queue which is hours long, so it's like an online thing and it's like five minutes slot, you just booked it in, went in, got your jab, got some information or whatever, it's easy. (Interview 2, Participant 3)

> Phoning is so inconvenient, they always make you push buttons and wait for ever and then I always hang up before I get to talk to someone. (Interview 3, Participant 2)

While the participants who preferred the phone option wanted a responsive conversation, a few participants expressed that they would find it challenging to accurately describe symptoms over the phone.

> It's very hard on the phone to explain properly, especially when … I recently talked to a lot of doctors and nurses on the phone and it was just really horrible every time, it was very hard to get through to them and find the right person to talk to and getting everything across. It's just difficult. (Interview 6, Participant 1)

> Yes and no, it depends because you're gonna have trouble describing the symptoms, I don't know, like check your temperature, check your blood pressure, I don't know how you'd do that over the telephone to tell someone so in that respect you would need to go into a doctor, GP, A&E. But on the plus side of that if you did get medication over the telephone you wouldn't have to wait around queuing in GPs, A&E, so you'd save yourself time in that sense to get the medication quicker but you'd have to be sure that you had the influenza in the first place, which you can't really be unless you go in and get everything checked. (Interview 8, Participant 4)

7.5.5 Vaccination

Vaccination was broadly viewed by participants as an effective means to prevent the spread of illness.

> As many people as they can vaccinate the better. (Interview 2, Participant 3)

> Because I thought it would be the best way to prevent yourself or reduce your chances of catching the flu, but then you'd have to do other things as well, so keep your personal hygiene at a good level and then maybe not go on public transport as often because that can be quite, I guess, susceptible to germs and picking up loads of diseases. So I'd probably get a vaccine just to be on the safe side. (Interview 4, Participant 2)

Several participants indicated they would seek out the vaccine as a means to protect both themselves and others.

> I would definitely get it. …see if I can still get the flu shot just because I strongly believe in herd immunity and I feel like if I can do my part to ensure that I'm part of the 80% that gets the shot then so be it. (Interview 7, Participant 6)

> Yeah, as long as it's free then yeah, no real cost to me and there should be a benefit for me and for everyone else. (Interview 8, Participant 4)

For a few participants, intention to vaccinate was predicated on medical advice and/or inclusion in an at-risk group.

> I think I only would get it if I have some problem or was pregnant or something, but if I was healthy I wouldn't apply the vaccine for myself. (Interview 1, Participant 3)

> If I got told to get it I would, like if my GP was like 'You should get it' then I would, but I wouldn't go out of my way to go ask for it, 'cause I'd probably think other people should get it first and then if I'm one of the people that should be getting it I would go get it, but apart from that I don't think I would. (Interview 3, Participant 4)

Several potential barriers to adoption of vaccination were identified by participants, including financial cost.

> I think if I were told by my doctor for a reason, given a reason, this is why you should take it, you specifically … but I wouldn't pay for it. (Interview 1, Participant 2)

> A good question. I don't know if it costs money. (Interview 3, Participant 2)

Ease of access was also considered by some participants to be a determining factor in whether they would consider vaccination.

> Make it really accessible, so like maybe go to a uni have a bit of a clinic (Interview 2, Participant 3)

> I'd go anywhere within walking distance but probably not further. (Interview 3, Participant 1)

While the principle of vaccination was broadly supported, the time frame required for the development of vaccine was identified as a potential barrier. For the participants who raised this concern, there was a sense that, by the time a vaccine was made available, the need for it would have diminished.

> Oh right… I wasn't gonna take it because I'm me but in general if it takes like six months to develop a vaccine most of the panic has kind of gone, so for me I just feel like it wouldn't be necessary. If someone said there's an Ebola vaccine today I wouldn't take it because it's just been so long. And I think that goes for a lot of the pandemics, I mean I didn't even know there was ever a vaccine for swine flu – there may have been but if there was I didn't take it. So I feel like if it takes six months to develop a vaccine… after six months you don't wanna take it. (Interview 4, Participant 6)

> Yeah, I agree, I would only if they suggested that for me it would be a good idea, but then with the vaccines, they often say that they're gonna make one then by the time the pandemic's over no one's actually received anything half the time. (Interview 8, Participant 3)

Equally, the timeline as well as the circumstances around the development of a pandemic influenza vaccine led some to express scepticism around the potential efficacy of vaccination in this context.

> She said that it depends on how much we pay, sometimes in some countries it's free and in others, like in my home country we actually have to pay for this and so when we have to pay for this we tend to be more reluctant to get the vaccine and if it's free I believe the government should be promoting this. And also another factor is how effective the vaccine is, because some vaccines virtually has not much real use basically, others are… so it depends on how effective it is and how expensive it is. (Interview 4, Participant 4)

> For me I generally believe in vaccines, I think the science behind it is well established but I would be cautious because if we're talking about six months' time frame, like what she said, it's a relatively short time and I would not be too confident about how reliable it is because it's at like testing, exploratory phase so I might wait a little longer before getting it. But as long as there is like sufficiently credible and reasonable… preventive functions of the vaccine I will be sure to get it. (Interview 4, Participant 1)

Likewise, vaccine safety was listed by a few participants as a possible deterrent to vaccination, particularly when the vaccine is first introduced.

> I would do the vaccines that are tested and I'm sure that they're safe, but I wouldn't do a new vaccine that I don't know the consequences of, because it's still part of the virus getting into your body so I don't feel safe if it's not very crucial and if the vaccine is not 100% safe. … …So I wouldn't really do it if it wasn't 100% necessary and safe. (Interview 4, Participant 3)

> I'd see how the first batch of people were reacting to it! 'cause there are times when the vaccine might cause some side effects that are undesirable. I would probably just stay home, watch and see if it goes down well, and if it doesn't then I would just not get it. (Interview 6, Participant 2)

Participants who felt they were not at risk or less at risk also tended to be disinclined to seek out vaccination.

> I still don't think I'm particularly at risk, I just don't really see the point. (Interview 5, Participant 1)

> I don't think so. Probably not because I don't feel like I would be in any of the groups that they give vaccine too. At least not at first. (Interview 6, Participant 1)

7.6 Communication

7.6.1 Information needs

When considering communication in the context of a pandemic, participants expressed a desire for factual, informative details. Three main themes emerged vis-à-vis participant information needs: medical information, protective measures and risk.

Several participants expressed a desire for what could be classified as general medical information. For some, their primary perceived knowledge gap was around the signs and symptoms of the 'ovine flu'.

> Yeah, like you were saying with the symptoms, how do you know if you have influenza, how do you know if someone you know has it, how do you know what you're meant to do if you do have flu? (Interview 2, Participant 1)

> So that space on a major newspaper would be much better spent saying, 'Do you have these symptoms? If so go to a doctor,' instead of trying to be overly dramatic about it, just be straight to the point. (Interview 2, Participant 2)

Information about the means of transmission of the virus was also in demand amongst a few participants.

> I think the means of transmission is very important –whether it's airborne or physical contact, things like this. It's probably airborne since it's 5,000 people but maybe I would put on a mask if it becomes really urgent or if it's recommended. (Interview 4, Participant 1)

> Yes, whether the virus is airborne or how commonly it is transmitted. (Interview 9, Participant 2)

Information needs around background or medical information was often paired with protective behaviours and participants wanted to know how they could detect and prevent illness.

> Yeah, again with the symptoms, of exactly how we can avoid getting the flu and stuff like that, like what we can do to reduce our risk of getting it and what to do when we do get it. (Interview 2, Participant 3)

> Definitely seek out more information. Learn more about the disease, more about how you can spot it, different various issues, what actions you can take if you do notice any symptoms, for myself and people around me. Also try to reconcile it with my own experience; do I know anyone who's been affected, do I see active measures being taken like masks being given out, hand sanitisers installed and all this. (Interview 5, Participant 2)

Several participants expressed an interest in having more information around what protective measures they could take to avoid becoming ill.

> I think I would try and read from some more sources to see how other newspapers or websites or any other news outlets talked about the story to see if there aren't any more practical detail or some more specific information. And then after that I would probably see if I can actually do something, so start taking some medication for just a little bit. (Interview 5, Participant 5)

> It also mentions the government response. I'd be on the lookout for anything I'd have to do, whether I have to go for a flu jab or a vaccine or something, if there's a policy implementation which I have to do something for as a citizen. (Interview 7, Participant 3)

A further theme that emerged was risk. Several participants wanted to have more information on who would be most at-risk, with this information potentially affecting their intent to adopt protective behaviours.

> A bit more about how it's spread, how it affects people who get it, how serious it is, who's at risk, what the symptoms are. (Interview 5, Participant 1)

> I would also be interested in knowing who the highest risk individuals or groups are, so if they're saying women and children should be more careful, I'll think about being more careful, but if they were like … healthy young people from the ages of 20 to 35 have the lowest risk, I'm probably not going to be very worried. (Interview 7, Participant 6)

Whilst not commonly brought up, a few participants did raise the issue of knowledge around government action. One participant indicated they would want to know more about what measures the government was taking and another

indicated they would not be particularly interested in government measures but rather would want to know what the medical community was advising.

> I would definitely be worried but I would also like more information and I think, for example, this article is very much focussed on the government and what the government would do, but at this point I wouldn't really care, I would prefer to have some more specific medical advice rather than people telling me stay calm when there's been a death in London. (Interview 4, Participant 3)

> What is their plan, pandemic influenza response plan. Like she said earlier, what are the causes of death and also where are the cases reported, so is it like all across the UK, is it particularly London 'cause it's more metropolitan. (Interview 9, Participant 1)

7.6.2 Trusted sources of information

Participant responses in pre-discussion questionnaires indicates a marked preference for new media sources rather than traditional (see Figure 7-1). As with the first phase older adults, health care professionals were overwhelmingly the most frequented source of medical information amongst participants (see Figure 7-2).

Figure 7-1 Day-to-Day News-Younger Adults

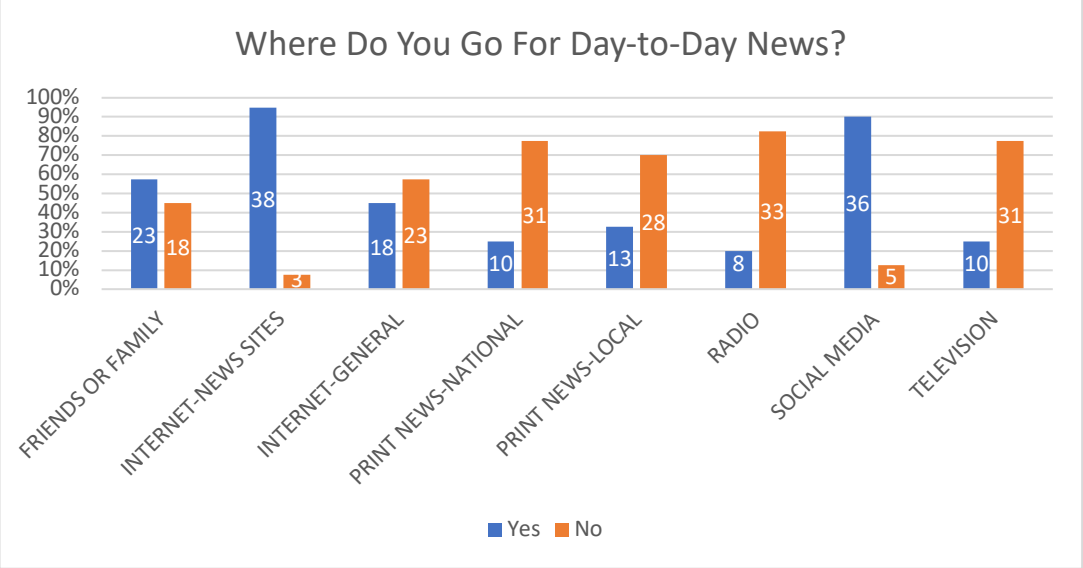
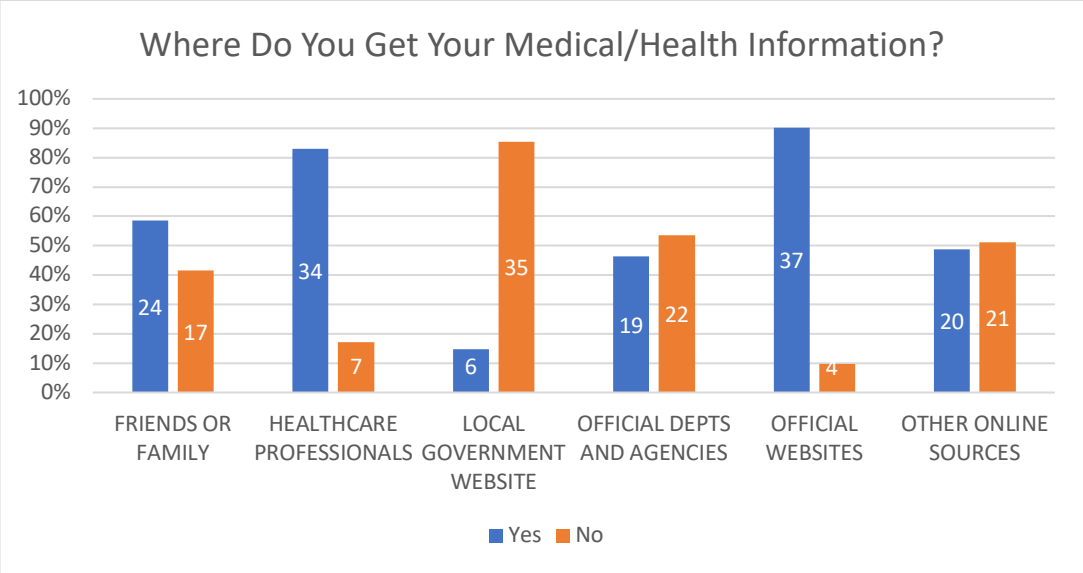


Figure 7-2 Medical Information Sources-Younger Adults



In discussing their information and communication needs, participants supported the views expressed in the questionnaire, particularly with regards medical authorities as a trusted and primary source of information during a pandemic. A few participants indicated that they would be inclined to seek information from either their own GP or any physicians they might know personally.

> I think if I knew any doctors and they were like, 'Actually this is a problem' (Interview 5, Participant 1)

> Yeah. I would just try to get information from official government departments and also maybe my local GP. (Interview 9, Participant 3)

National and global medical organisations were a consistent point of reference for many as perceived pandemic experts.

> I would probably rely on the World Health Organisation or the NHS. … …I just feel this way, I feel it's more, I don't know, they are more reliable sources and more trustworthy when it comes to medical issues rather than the news. (Interview 4, Participant 3)

> I would go to like NHS website, possibly if there's a similar medical authority within the EU, which I trust would be reliable, so more independent medical authorities and possibly the World Health Organisation websites. … …'Cause I trust them to be the medical authority, like they represent the medical community and they are always the ones who are communicating with lay people like us. So a lot of the information that you find on the website you can understand the language as opposed to trying to find out what's really going on, you probably won't understand or get too much information. Yeah, I think I tend to trust medical authorities. (Interview 8, Participant 1)

Several participants saw family, particularly parents, as a trusted and reliable source of information in a pandemic.

> I'd trust family members, like mum or something, ask her, say, 'I'm feeling down, I've got a cold, I've got a cough, what should I do?' then if she tells me I have flu based on what I've told her, then I'll believe her. – Interview 2, Participant 3)

> Yeah, I think the first person I would probably tell would probably be my parents and hopefully I would hope that they know about the influenza and so they could probably tell me, 'Go to the doctor,' or do that or do that. (Interview 2, Participant 1)

News sources were not generally perceived to be preferred or trusted sources of information with many participants expressing concerns over biased or inconsistent reporting.

> There's a conflict of interest. If you ask a newspaper, if you ask different newspapers they might give you a different answer 'cause they have different news sources and probably it ties with some businesses that don't want this to be a big thing. (Interview 6, Participant 2)

> I would just trust the WHO's advice more than I would The Independent. So I'm willing to think that the WHO is going to talk about it in a more scientific but a more unbiased way whereas the newspapers are quite … they do what they wanna do. (Interview 7, Participant 6)

Despite this scepticism, some considered the BBC to be a trusted source of information.

> BBC, yeah I think when the NHS releases a press statement the BBC will probably report on it, and I trust they report on things actually accurately and I don't really go onto the NHS website, I would … just want the BBC to feed it to me so (Interview 4, Participant 1)

> The BBC, I think I'd trust if it came from the BBC. … …I suppose reputation, like I've never had… it's difficult because I've not been in this kind of scenario with it affecting London and things like this or while I've been here. But if I've ever received important breaking information from the BBC News it's been true so I have that… not re… well, kind of respect, that I respect what information they would send out is something that would be verifiable. (Interview 8, Participant 4 Yeah, I agree. I think BBC is obviously politically neutral so it's like I would trust it and obviously if they say this information comes directly from the NHS or a medical authority then I would trust it. I mean I think in that case it would most likely… pretty much every major publication would relay the same message I think, maybe some would exaggerate more than others but I think they usually fall back to the BBC. (Interview 8, Participant 1)

Governments were, on the whole, considered to be a trusted and credible source of information. A few participants indicated they would be inclined to make use of government websites as a reliable source of information about the pandemic.

> Government websites, so I want more formal data instead of newspaper columnists or journalists. I think they're more credible, the government. (Interview 6, Participant 2)

> Probably from a course that has been done by government official, department of the government, and mostly something that is … officially done and something, some source that I can trust. Probably not internet! Not Wikipedia! (Interview 9, Participant 3)

Universities were also considered by most participants to be a trusted source of information due to a perceived interest in student wellbeing.

> Also they're [universities] meant to look out for their students. They're relatively big on pastoral care and that's part of making sure that we're healthy so they're not gonna be like, 'No, you still need to come in, but by the way you might get really ill' so I would trust them to do what is best for us ultimately. (Interview 5, Participant 1)

> Yeah, I reckon they're [universities] probably more overcautious than us probably so I would probably trust them because they'd probably wanna take the measures to make sure that they're keeping the staff and students safe so I would probably trust them. (Interview 8, Participant 2)

Although participants indicated they were quite active on social media, this was not identified as a trusted source of information. However, one younger adult did bring up the potential utility of social media as a portal to external information sources.

> I agree, but I feel like we are more daily linked to this type of thing, for example when checking Facebook or something, so we check the news so maybe like a link or something that takes me to that official information data or something, 'cause I probably wouldn't Google how lethal is it or something like that, to get to this specific, official information. So kind of networking between both types of information. (Interview 6, Participant 3)

7.7 Discussion

Younger adult initial perceptions of pandemic influenza often focused on either 'pandemic' or 'influenza'. Participants who focused on the former were more likely to describe an influenza pandemic as a serious threat than those who associated it more with seasonal flu. Many participants felt that spread would be a pertinent factor and one that they would need more information about in order to adopt

protective behaviours. Prior experience of pandemic influenza affected younger adults understanding of pandemic influenza. This was particularly noticeable with students from the Americas and South-East Asia where experience of pandemics has been more conspicuous in recent years (ie: Avian flu, H1N1, SARS). Several participants expressed that they had been indirectly affected during the 2009 H1N1 (Swine Flu) pandemic and one participant had contracted the illness. The role of experience in influencing perceptions of pandemic influenza was also identified in a Canadian study which found lower levels of concern around the H1N1 pandemic; likely the result of fatigue regarding recent similar threats.[366] This perception, coupled with the experience of the 2009 H1N1 pandemic, with a less virulent strain of influenza[367], would indicate an area where targeted or enhanced communication may be useful in addressing perceptions of risk in order to avoid misperceptions.

In addition to personal experience with Swine flu, several participants used the 1918 Spanish flu as a reference point for understanding pandemics, along with Ebola and SARS. Although many participants were aware of the detrimental effects of the 1918 flu, and expressed concerns about the reference to this in the scenario, several felt that this was a false comparison due to advances in medicine and hygiene conditions. Whilst the Spanish flu is often referenced as a potential 'worst case scenario' for pandemic planning, these interview responses suggest that comparisons with historic influenza pandemics may not have a great effect in influencing risk perceptions in a younger population due to assumptions around technological and societal shifts.

Several of the factors that influenced risk perceptions in these groups, such as development time for a vaccine, suggest further areas where communication could be used to reduce anxiety and encourage adoption of health protective behaviour.

[366] Taha, Matheson, and Anisman, "The 2009 H1N1 Influenza Pandemic: The Role of Threat, Coping, and Media Trust on Vaccination Intentions in Canada."
[367] Crosier, McVey, and French, "By Failing to Prepare You Are Preparing to Fail': Lessons from the 2009 H1N1 'swine Flu' Pandemic."

Additionally, concerns around food contamination and agricultural production highlights an area where misunderstanding, or confusion, around transmission routes can potentially be a burden on resources. Participants in this study who expressed uncertainty around the connection between the influenza virus and the zoonotic origin would often indicate they would avoid related animal products (ie: eating lamb or wearing wool) and would stay away from farms as illness prevention measures. This confusion over influenza nomenclature was also identified in a 2010 study which found university students, whilst broadly understanding infection routes, were confused by the animal role (pigs) in the H1N1/Swine flu pandemic.[368] One possible approach to addressing this challenge can be seen in the Canadian response to the 2009 pandemic. In this case, during the 2009 pandemic, a concerted effort was made to refer to the virus as H1N1 and not Swine flu with the Chief Public Health Officer announcing this shift in May 2009.[369] This was done, not only to avoid confusion over flu transmission routes[370] but also to avoid potential economic knock-on effects to the Canadian agricultural sector and associated costs, both in resources and time.[371]

Younger adult participants were not in agreement regarding the use of the terms 'risk' and 'vulnerability' with some participants feeling they could be used interchangeably and others labelling them as distinct terms. This would suggest that, from a communicating with the public perspective, formally distinguishing between 'risk' and 'vulnerability' is not a priority. Nevertheless, consistent application of the terms may yet prove beneficial to improve clarity of communication; particularly in a situation with an atypical risk perspective. The potential for a future pandemic to feature atypical risk profiles presents a challenge for policymakers and health professionals. Younger adult participants were more likely to identify traditional groups (i.e.: older adults, children, individuals with

[368] Seale et al., "Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza."
[369] Public Health Agency of Canada, "Lessons Learned Review: Public Health Agency of Canada and Health Canada Response to the 2009 H1N1 Pandemic."13
[370] Fitzpatrick, "15 New Cases of Swine Flu Confirmed in Canada."
[371] Author's experience as senior political advisor to the Canadian Minister of Health during this time.

compromised immune systems) as being most at risk in a pandemic. Where student risk was considered, it was far more likely to be considered either in the context of environmental factors (i.e.: being in high-density conditions such as university) or because 'everyone would be at risk'. Furthermore, when asked their reactions to being told they would be at-risk, many students were inclined to doubt the guidance due to perceptions that their personal health status would reduce susceptibility. This echoes the findings of previous studies with young adults which found perceptions of higher risk among traditional at-risk groups, a view that overall physical and social health in younger adults would reduce risk, and a prevailing sense of invincibility or invulnerability in this age group.[372]

Participants' perceptions of response efficacy with regards to the recommended actions studied were generally high. Handwashing and respiratory hygiene were the most highly regarded in terms of efficacy with participants being overall supportive of these measures. This is encouraging from a public health perspective as previous research has found a strong link between the belief in response efficacy and the adoption of said behaviour.[373] Although most participants were not against vaccination per se, there was less support for a vaccine specific to pandemic influenza, largely due to concerns over the timeline for delivery, the effectiveness of this particular vaccine, and safety-given the novel nature of the vaccine. Concerns of vaccine safety have also been identified in previous research with this population group, which linked low uptake of vaccination to concerns over side effects[374] and health outcomes[375]. Seeking medical assistance if ill was also generally supported as a useful behaviour though some participants expressed

[372] Agarwal, "A/H1N1 Vaccine Intentions in College Students: An Application of the Theory of Planned Behaviour"; Seale et al., "Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza"; Van et al., "University Life and Pandemic Influenza: Attitudes and Intended Behaviour of Staff and Students towards Pandemic (H1N1) 2009"; Taha, Matheson, and Anisman, "The 2009 H1N1 Influenza Pandemic: The Role of Threat, Coping, and Media Trust on Vaccination Intentions in Canada."
[373] Gaygisiz et al., "Individual Differences in Behavioral Reactions to H1N1 during a Later Stage of the Epidemic."
[374] Rodas et al., "Exploring Predictors Influencing Intended and Actual Acceptability of the A/H1N1 Pandemic Vaccine: A Cohort Study of University Students in Hong Kong."
[375] Wilson and Huttlinger, "Pandemic Flu Knowledge among Dormitory Housed University Students: A Need for Informal Social Support and Social Networking Strategies."

doubts as to the ability of physicians to cure flu and felt they would likely be advised by their GP to take the same measures, such as staying home and taking over-the-counter pain medication, that they would have taken without medical advice. This indicates a potential area for communication intervention in the event of a pandemic, as participants were not generally aware of medical interventions such as anti-virals. Isolation, as a preventive measure, was viewed as potentially useful but ultimately not practical.

With the exception of isolation, perceptions of self-efficacy were high for the recommended behaviours that were presented to participants. Handwashing and respiratory hygiene were both deemed to be easy, non-intrusive and relatively low-cost measures that they could implement to reduce the likelihood of becoming ill and limit the spread of the illness. This result is in line with previous research which found that hand washing and respiratory hygiene were more likely to be adopted than other measures such as social distancing due to ease in implementing.[376] Seeking medical assistance and vaccination were both reported by participants to be high in terms of self-efficacy, or the ability of the participants to carry out these actions. However, some participants were reluctant to adopt these measures due to a sense of perceived cost, either time or financial. Although a few participants indicated they felt they would be able to dramatically reduce their time out-of-doors, many felt this behaviour was not one they would be able or willing to adopt. Reasons for this varied from obligations such as university or work that were considered to be unavoidable or a general disinclination to curtail extra-curricular activities, often due to a perception that their personal level of risk was not high enough to demand such drastic measures. The comparatively low intent to engage in voluntary isolation, as compared to other protective measures is also in keeping with the results of other studies. In determining their willingness to voluntarily isolate, participants often distinguished between professional (ie: university or employment) and social activities. Although participants in this research did not

[376] Seale et al., "Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza."

agree on which set of activities would be prioritized, a previous study found greater willingness to forego academic obligations over social interactions.[377] Conversely, an Australian study on university students found a comparatively high number of participants were disinclined to absent themselves from university not only as a preventive measure but also if experiencing influenza-like illness (ILI).[378] Taken together, these results suggest that isolation is less likely to be voluntarily adopted than other protective behaviours and, furthermore, there appears to be a lack of consensus around prioritization of activities which may create additional challenges in encouraging uptake of this behaviour in future.

Opportunity costs (or conversely, lack thereof) were the most frequently cited barriers or enablers to adopting the recommended behaviours that were discussed, with the exception of respiratory hygiene. Although handwashing received broad support, challenges in accessing facilities was highlighted as a barrier to traditional handwashing though, conversely, the portability and relative low-cost of hand sanitizer was seen as a way to cleanse hands by other means. The role of hand sanitizer was also referenced in a previous study which found that participants who expressed negative views about their willingness to adopt recommended protective behaviours would often propose behaviours, such as the use of hand gel, which seemed 'easier'.[379] Taken together, the perception of hand-gel as an easy, low-cost, portable option suggests it may provide an alternative in promoting hand hygiene amongst individuals who would not otherwise be likely to engage in this behaviour. In addition to the barriers identified in the literature, this study found a lack of easy access, largely vis-à-vis wait times, was also considered a potential barrier to seeking medical assistance. Equally, ease of access as well as potential financial costs were raised as factors that might diminish participant inclination to vaccinate against pandemic.

[377] Purssell and While, "Knowledge about Pandemic Influenza in Healthcare and Non-Healthcare Students in London."
[378] Van et al., "University Life and Pandemic Influenza: Attitudes and Intended Behaviour of Staff and Students towards Pandemic (H1N1) 2009."
[379] Morrison and Yardley, "What Infection Control Measures Will People Carry out to Reduce Transmission of Pandemic Influenza? A Focus Group Study."

Although the barriers to practicing good respiratory hygiene were primarily motivational, several participants mentioned the unplanned nature of a cough or sneeze, and the potential inability to access a tissue in time, as a potential physical capability challenge. These types of practical difficulties were identified in a previous study with participants also identifying the unpredictability of coughs and sneezes, along with the potential lack of disposal options for used tissues as barriers to action.[380] Perceived motivational barriers varied somewhat depending whether participants were inclined to use their hand, a tissue or their sleeve, however the need to plan ahead in order to be carrying tissues was cited as a potential challenge. Additionally, several participants expressed an instinctive distaste for using a sleeve as they perceived it to be less hygienic. Motivational factors were also seen with handwashing and vaccination. A few participants expressed the need for social pressure to promote handwashing and for individuals to develop the habit of washing their hands properly. Contributing to herd immunity and protecting others was referenced by a few participants as a factor that would incentivize vaccination for them.

As with seeking medical assistance (in general), ease of access was a recurring theme for younger adult participants when asked about their willingness to use a National Pandemic Flu Service. The medium in which they could access the flu service was also important with the overwhelming majority of participants preferring an online option over a phone line. Using a phone line was felt by many participants to be a much less comfortable experience with several indicating they felt the information received over the phone would be less credible than that on a website. The few participants to indicate a preference for the phone line were clear about wanting or needing to receive the information via an interactive, responsive process in order to feel confident in its accuracy. These concerns over

[380] Morrison and Yardley.

accuracy, or reliability, were identified in a prior study which found participants were not comfortable being asked to recognise symptoms and self-diagnose.[381]

Information needs throughout the scenario tended to centre around factual or actionable information. The number of participants wanting more information increased as the scenario progressed. However, the nature of the information requested remained relatively consistent with most expressing a desire for medical information regarding risk, symptoms and preventive measures. This is in keeping with the results of a Dutch study which found that information around recognizing symptoms and ways to protect oneself was the communication participants were most keen to receive.[382] This preference for clear and actionable information also reinforces existing guidance by both the WHO and EU which suggests this type of messaging be prioritized.[383] Preferred information sources were fairly consistent, with the NHS and medical authorities seen as a key trusted source of information; which echoes previous research that has identified medical professionals as a trusted source of information in a pandemic.[384] . On the whole, participants were much more inclined to put their trust in traditional authorities (government and medical experts) over news media sources, with the occasional exception of the BBC. This may perhaps be due to a greater level of education and associated confidence in parsing official texts or dealing with primary sources. The frequent reference to WHO as a trusted source may also be a reflection of the more international, globalized nature of the Interview participants.

Knowledge of pandemic influenza amongst younger adult participants was influenced by experience with younger adults frequently relying on the 2009 H1N1 pandemic as a frame of reference. Additionally, younger adults were less likely

[381] Teasdale and Yardley, "Understanding Responses to Government Health Recommendations: Public Perceptions of Government Advice for Managing the H1N1(Swine Flu) Influenza Pandemic."
[382] Kok et al., "Behavioural Intentions in Response to an Influenza Pandemic."
[383] Crosier, McVey, and French, "By Failing to Prepare You Are Preparing to Fail': Lessons from the 2009 H1N1 'swine Flu' Pandemic."
[384] Kok et al., "Behavioural Intentions in Response to an Influenza Pandemic"; Jehn et al., "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic."

than their older counterparts to immediately assume worst-case scenarios, such as the 1919 Spanish Flu. Given the 2009 pandemic featured a less-virulent strain, this may affect risk perception amongst this population group in the event of a future pandemic.

Overall, younger adults expressed the intent to adopt recommended protective behaviours. Hand and respiratory hygiene were not only seen as efficacious but also frequently referenced as habitual behaviours in day-to-day life. As habit has been shown to have a strong influence on hygiene behaviour,[385] the current self-reported uptake of these behaviours in this population group suggests these behaviours will be continued during a future pandemic. Whilst broadly supportive of vaccination, several participants expressed concerns around the safety and efficacy of vaccine as a result of the short timeline and novel nature. This suggests an area where public health communication could be used to address, and reduce, these concerns. Finally, voluntary isolation was, for many participants, not considered to be feasible unless absolutely mandatory. Some participants were unwilling to forego social activities and many expressed that the financial and education implications of university and employment were such that these activities could not be avoided. These types of considerations must be taken into account by emergency planners, as well as partners in the public and private sector, in developing pandemic plans as the potential duration and virulence of a pandemic may increase its disruptiveness.

Information needs for younger adults, vis-à-vis content, are similar to those of their older counterparts with study participants expressing a desire for clear, informative, and fact-based information which advises on the nature and spread of the pandemic as well as recommended protective behaviours. Younger adult participants were prepared to accept they may be at risk but many indicated they would need to be provided with explanatory information as to why they were at

[385] Curtis, Danquah, and Aunger, "Planned, Motivated and Habitual Hygiene Behaviour: An Eleven Country Review."

risk as well. Where younger adults differed noticeably from older adults was around medium of communication. Whilst many younger adults do seek information from traditional media sources, they expressed an overwhelming preference for digital based media. Taken together, this research suggests that younger adults are either already engaging in, or would intend to engage, in recommended protective behaviours however, there remain some areas where communication, and policy, could be directed to improve uptake of protective behaviours

7.8 Chapter Summary

This chapter examined the results of the first phase interviews with younger adults. This consisted of a two-part scenario examining risk perception, behavioural intentions, and communication needs of younger adults during a pandemic. The next chapter will present the results of the second phase Interviews with older adults, testing a newly designed communication intervention designed to address some of the key issues identified in Phase 1 (Chapter 6).

8 Chapter VIII: Perceptions of Risk and Behavioural Responses Amongst Older Adults to a Novel Communication Intervention During an Outbreak of Pandemic Influenza

8.1 Chapter Overview

This chapter will present the results of the second phase of interviews with older adults. The second phase of interviews with older adults was designed to build on the findings of the first phase of the research by testing a novel communication intervention concerning vaccination priority groups where older adults are not included, to better understand older adult information needs and behavioural intentions. Participants were divided between those who received the standard leaflet (A) and those who received the leaflet with additional information on at-risk groups (B). As well, this phase of the research looked to increase understanding of older adult perceptions of risk and communication needs in the event of a pandemic. A full description of the intervention and methods for this study are included in Chapter 5.

8.2 Knowledge and Perceptions of Pandemic Influenza

As with Phase One interviews, the key themes participants identified around knowledge of pandemic influenza were spread, reference to past pandemics, and potential confusion around the terminology. Several participants identified a pandemic as being a global event.

> That it stretches right across thousands of people, you know, an overall thing, everybody. Different countries, countries and everything. (Interview 3, Participant 2 (B))

> Perhaps even worldwide, I suppose, the extreme of things, yeah. (Interview 13, Participant 1 (B))

In some cases, participants had a sense that a pandemic was a foreign problem.

> If it doesn't happen here it's usually abroad, Africa or somewhere else so I wouldn't worry about it. (Interview 23, Participant 1 (B))

> Asian flu 'cause I had it in '57. I suppose that's the first thing that comes in and then I assume a similar sort of phenomenon as such, but it always seem to come from the East (Interview 6, Participant 1 (B))

The potential scope and human cost of a pandemic was also identified with

participants considering that a pandemic would be likely to result in high rates of morbidity and mortality.

> It makes me think of a disease which is spreading rapidly from person to person (Interview 22, Participant 1 (A))

> I think it's like, when you said it, which means so many people have the influenza, it's a pandemic so many, many, many people and this means the hospitals are overloaded. (Interview 12, Participant 1 (A))

Participants frequently identified previous pandemics, particularly the 1918 Spanish Flu, as a frame of reference though other, more recent health events such as bird flu and Ebola were also mentioned.

> I mean there has not been, I think, influenza pandemics for many years, at least not in Western countries, it was something like a 100 years' ago, wasn't it, about the time of the Great War, there was a huge one? Yeah, probably more people died from that than died in the War, so it is that sort of scale of mortality that I'd associate it with. (Interview 2, Participant 2 (A))

> It makes me think of something similar to all the health scares we've had in the past, Asian flu, Hong Kong flu, latterly bird flu, that and HN virus and so on, and possibly stuff like Ebola. (Interview 17, Participant 1 (A))

Despite general perceptions around the potential mortality rates of a pandemic, as well as the references to the devastating 1918 Spanish Flu, a few participants expressed a sense that an influenza pandemic was not actually a threat in this day and age.

> When I hear this word pandemic, for me it sounds like they are scaring people because I don't really believe that there is such a thing. My mind goes to this Middle Ages pandemics, real pandemics. They have the resources to avoid any pandemic I suppose, so maybe I am not fair saying this but I think the status quo, the matrix of the, they are scaring people. (Interview 11, Participant 2 (A))

> Influenza is a disease and is quite common, a virus disease, and occasionally the incidence of the disease reach such a high degree within society that there are these…I'm trying to avoid the word panic… but it has a social movement which goes beyond the rational and becomes irrational in people's minds. (Interview 18, Participant 1 (B))

Some participants did indicate a lack of certainty around the distinction between 'epidemic' and 'pandemic' though with the sense that 'pandemic' was a more concerning turn of phrase.

> Yeah. I think it is, I think pandemic is a much more scary term versus a…you know you get an epidemic of some sort of childhood disease and all the schools are getting it, but it's not… epidemic feels far more localized, you would think about

> there was an epidemic of so and so in a northeast region or there was an epidemic going round the schools in a particular borough of London or whatever. But pandemic has got this sort of sweep feeling to it. (Interview 6, Participant 1 (B))

> International problems of a disease spreading rather than just a local breakout. I'm not sure of the difference between epidemic and pandemic but pandemic sounds pretty grim. (Interview 7, Participant 1 (B))

As with Phase One participants, the naming conventions for zoonotic origin flu strains (such as the recent Swine flu or Avian flu) caused confusion for scenario participants who were unsure as to how the virus might spread and, in a real-life situation, could potentially result in either a misperception of risk or the adoption of ineffective or potentially detrimental behaviours.

> That might be fed by… actually contact with meat…lamb products. Mind you, wool might be there, wool might be a problem as well because lambs are covered in wool? (Interview 17, Participant 1 (A))

> I suppose I would expect this to be a much more rural thing, would it not? I mean, I don't know? I think, again I would depend on the advice… I would be interested to know what people said about it but if it was just down to me I would say it would be more likely if in my former life I was still living in the country in Australia with all the animals and stuff. (Interview 4, Participant 1 (A))

8.3 Baseline Perceptions of Risk

8.3.1 The Lexicon of 'Risk' and 'Vulnerability'

As seen with Phase One older adult participants, older adult participants were not in agreement about the potential distinctions between risk and vulnerability though a few trends were observed. Vulnerability appears to have a less clear or consistent definition in the minds of participants. It was variously described as synonymous, distinct, more personal, and less significant than risk. Many participants felt that there was no differentiation between the terms.

> It's the same thing, isn't it? (Interview 2, Participant 2 (A))

> Well, vulnerable and at risk are practically synonyms. (Interview 17, Participant 1 (A))

For some, vulnerability was considered to be a characteristic conferred by age.

> I would assume with anything like that, that once you get to a certain age you are vulnerable anyway! (Interview 24, Participant 3 (A))

> … ‘cause being elderly, presumably you are vulnerable anyway so you’re better to stay away from people. (Interview 9, Participant 1 (B))

For other participants, the concepts were distinguished in relation to breath and strength of meaning.

> Vulnerable I don’t think means as much to people as at risk, at risk is more… Yeah, you’re at risk, you’re at risk of dying or something like that but vulnerable is a softer… I don’t think it’s…You know, you say at risk, you’re at risk of catching this because… that would be more helpful. (Interview 22, Participant 1 (A))

> I don’t think so, not to me, they both mean the same sort of thing, one perhaps means it more than the other, but I don’t know which? Oh, except that maybe vulnerable applies more to age bands and at risk is a wider term, perhaps? (Interview 15, Participant 1 (B))

Finally, vulnerability was described as having a more personal connotation.

> Vulnerable has different connotations to being at risk. It’s definitely a different… in perception it does mean something different and it is certainly a more… I suppose really if it’s put in this context if you say vulnerable you sort of think, oh, there’s a high chance that I might get it because I’m vulnerable. If I’m at risk, well, there’s a possibility, I’m at risk of getting it but there’s a bit more of a but factor in at risk; vulnerable has definitely got particular connotations. (Interview 6, Participant 1 (B))
> Yeah. It’s personal. (Interview 6, Participant 2 (B))

> Yeah, If you’re saying to somebody you’re vulnerable, you know? What’s the difference between at risk and vulnerable, vulnerable sounds like something to do with me, somebody has detected something in me that makes me more at risk, that’s what I would assume vulnerable meant (Interview 10, Participant 1 (B))

8.3.2 At-Risk Groups

As with Phase 1 participants, most participants at Phase 2 held views of risk in line with traditional medical recommendations regarding seasonal flu as well as policy guidelines on emergency planning and vulnerability. When asked who would be most at risk during an influenza pandemic, answers frequently included older adults, children and individuals with compromised immune systems or chronic health conditions.

> Who would be at risk? I would think older people, babies and the children. Those who had some kind of continuing illness, particularly breathing. They have less resistance, I suppose, they are weaker, I suppose the youngest ones are less well-nourished, people who have… Yeah, people who have breathing problems or obviously they haven’t got the resistance and things may make them more susceptible. (Interview 4, Participant 1 (A))

> Anybody with a lowered autoimmune system and usually the elderly, anybody that's got a long-term health condition, babies and young children, and anybody that doesn't have a fully developed immune system. (Interview 17, Participant 1 (A))

While older adults were typically included as being at-risk due to weakened health or immune systems, one group posited that older adults were, in fact, healthier than their younger counterparts due to life experience.

> Anybody who lived through the war is far healthier than anybody who lived after. I mean look at us, we're not obese at all… we're not really the junk food generation are we? This is the thing. We're not. (Interview 8, Participant 1 (A))

Individuals who were unable to isolate themselves during a pandemic were also identified as being potentially at risk due to their inability to avoid exposure.

> Nine times out of ten, if you go to work and you're self-employed, you've gotta go to work, ain't you? So then you're self-employed, wherever you go, if there's a lot of people there, whatever you've got you're gonna pass it on to them, ain't you? So they're the ones who really matter is the ones who go to work. (Interview 8, Participant 3 (A))

> …people who travel in crowded trains, buses, which I don't do nowadays (Interview 13, Participant 1 (B))

As with the first set of older adult interviews, poverty was identified as a potential risk factor.

> And I would have thought people who lived in poor housing conditions. They're probably more vulnerable. Maybe the basic health is not that good in the first place, to enable them to resist that kind of thing. (Interview 24, Participant 2 (A))

> The elderly, the very young and the poor, poverty is a great spreader of disease. (Interview 7, Participant 1 (B))

Lastly, two participants did identify the potential risk to younger adults due to a lack of previous exposure to the flu strain.

> And that was an interesting, I believe in some of the pandemics it's the younger people who are most at risk because they haven't had the flu through their lifetime but then again, when you're older you're very susceptible to respiratory and obviously pneumonia which, do you carry that around with you? (Interview 22, Participant 1 (A))

> I sort of get this occasionally with these fluey things, I remember one of these things where there was going to be a possibility and then they said it was related to Asian flu, so I thought right, my generation would be alright because we'd got the immunity having had it in flu 'cause there was definitely one strain that they said was related to it and in fact older people weren't getting it because we'd picked up an immunity when we were children. I think certainly you do think of the…if it's a

> completely new strain you do think of people who are less healthy, older and you get certain… certain targeted groups, people like diabetics are always told to get their flu jab. I don't think you think of… you think of children getting it but sort of bouncing up again. (Interview 6, Participant 1 (B))

8.3.3 Challenges for Older Adults

8.3.3.1 Coping Challenges

As at Phase 1, loneliness and, consequently, lacking the support structure to assist if ill, was identified as a primary challenge for older adults'.

> Yes, the fact that you might be on your own and if you're already having problems with movement because of existing medical conditions, you might have problems getting to the surgery, to be helped. (Interview 17, Participant 1 (A))

> I think accessibility, so hence if someone's lonely or on their own who doesn't have anything they could just die. There's more people on their own, older people that are on their own, whereas if it was younger people they've usually got family or friends around that they could call on. (Interview 9, Participant 2 (B))

In addition to living alone, mobility was also suggested by participants as an area in which some older adults might struggle, particularly with regards to accessing vaccination.

> Well, those that are unable to access getting the vaccine if their mobility is such, I don't know how that will be offered to them otherwise if they couldn't get to a clinic or whatever. (Interview 20, Participant 1 (A))

> Getting to places where vaccinations can be given and people don't always have again family to get essential comestibles for them or things that they need although pharmacists these days do deliver, we have an excellent pharmacy. (Interview 7, Participant 2 (B))

There was also a sense that a breakdown in systemic or societal structure such as long queues at A&E, crowding in supermarkets or public services being shut down due to illness could have an adverse effect on older adults.

> Well, if you're fighting to get in the supermarket or to the A&E, that would be a challenge. I know I wouldn't want to be standing around waiting for… my legs would start to hurt after an hour or so, but that would be worrying. If one had to fight to get stuff out of a supermarket and the shelves were empty, then that would be very difficult for an older person because I know young people would just come in and push you aside. (Interview 22, Participant 1 (A))

> Yes, lots because if people are falling ill then they're not able to run the various services that we need; where would all the nurses come from, and the hospitals and the doctors; how would the food come in? (Interview 23, Participant 1 (B))

8.3.3.2 Communication Challenges

Several participants identified a challenge relating to the perception of 'older', highlighting the breadth of ages which fall within the classification of 'old'.

> It is very true because it is that fact that if you say pensioners, older people, whatever you sort of call us and now it's about 30/40-year spans. 60 to 100… I mean you've got two generations within there now. (Interview 6, Participant 1 (B))

> The health circumstances, that range from 65 to 100… you know… is incredible! I mean we have a neighbour who will be 100 next year, and he's… (Interview 24, Participant 2 (A))
> And he's fitter than us! (Interview 24, Participant 1 (A))

Some participants found it difficult to instinctively consider themselves as being in an 'older' category.

> Yes, I think it [communication] needs to be more nuanced because that's quite, well, in my case sort of 26 years, it's quite as I say, I consider my mum's health very fragile now but I don't consider that mine is fragile. (Interview 6, Participant 2 (B))

> I find it very hard to accept that I'm in the elderly range now, I'm 73, and it's really hard to come to terms with it 'cause in my head I'm 40. I know I'm not when I get up and go to walk but I'm still 40 in my head, although I know I'm not. (Interview 15, Participant 1 (B))

This in turn contributed to a potential skepticism of public health guidance aimed at older adults as it could be interpreted not to be personally relevant.

> It's sort of crying wolf if you see what I mean, saying… yeah, crying wolf and crying fire, you know, saying you're at risk, you're at risk, you're at risk and neither you nor anybody you… none of my contemporaries are getting these things you think, well, they're saying all the time we're at risk when it seems we're not. So I think they should pull back a bit and if people… well, no you cannot say that everybody over 64… there's no longer a compulsory retirement age at 65 or anything else and people have got healthier, the population has got generally healthier and longer lived. And I know part of the extended lifespan is not necessarily in good health, but nevertheless I think they need to take account of greater longevity and better healthcare and better health and think a bit harder about who is really at greater risk. And of course there are people my age who have been unlucky and would be presumably at greater risk, people with compromised immune systems for whatever reason, etc. etc. of course there are. But I wouldn't have thought it was true to say that people my age generally are more at risk than people in their 50s, but what do I know? (Interview 1, Participant 1 (A))

> Yes, because otherwise one might tend, depending on…to ignore it, to say, 'They're always saying this,' and it's a big ageism, because there's a huge cate… I'm very, very fortunate in that at the moment I'm fit and well and not disabled in any way, but there are other people that are my age who are and have been ill for some time. So it's like anything, you feel if it doesn't apply to you that…Well, you feel it doesn't apply to you, so the danger then is that you might not take any notice, which is a danger, so an explanation about why you're vulnerable would be

> helpful 'cause it would make me think, 'I need to take note of this,' whereas just having a box and ticking it or having something through the post, unless there's an explanation I think, 'Well, that won't apply to me,' 'cause I haven't got used to thinking of myself like that. (Interview 20, Participant 1 (A))

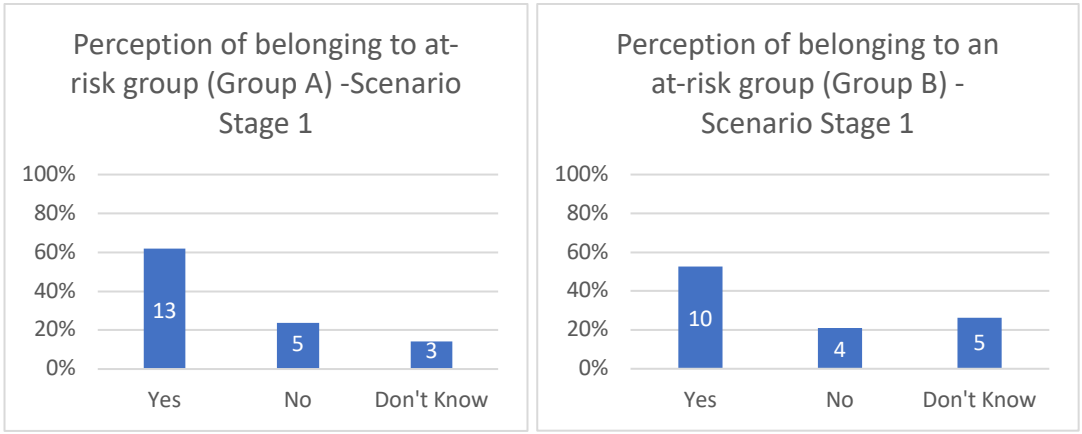
8.4 Stage One: Vaccine Developed

In stage one of the phase two scenario, participants were provided with a mock newspaper article describing the pandemic which had been underway for a few months. Central to the story was that a vaccine had now been developed and was, shortly, to be made available to the public. At-risk groups would be prioritized with the general public gaining access at a later point. At this stage of the scenario, both groups received identical information. Participants were also asked to fill out a short questionnaire and answer whether they felt they would be part of an at-risk group and whether they intended to receive the vaccine at his time.

8.4.1 Risk Perception

In the first stage of the scenario, participant responses to the questionnaire indicated a lack of consensus in their perceptions of personal risk with more than half believing they would be part of an at-risk group (see Figure 8-1).

Figure 8-1 Participant Questionnaire Responses-Perception of Belonging to an At-Risk Group-Scenario Stage 1



In the discussion, several participants expressed the sense that due to age they would consider themselves to be at risk.

> Yeah. Because we are of an age group where resistance is generally lower than when you're younger, that's the only reason. (Interview 7, Participant 1 (B))

> 'Cause of my age, that's what they tell you. If you're older you're at risk. (Interview 9, Participant 2 (B))

Health was a consistent factor influencing participant perceptions of risk.

> Definitely, because age and general health and also having gone down with… If there's anything going round I tend to catch it anyway (Interview 17, Participant 1 (A))

> No. I don't think so. I strongly believe if you're healthy you have a good chance. It's the people who are ill, who have illnesses, yes. (Interview 12, Participant 1 (A))

Along with health, lifestyle was identified by participants as a risk factor.

> Yes, I think so. 'cause I also live a life where I go out and about and mix with people at various social situations, where even coming up to town and things like that, public transport, yeah, and also this age is a factor. So yeah. I think I would be more at risk. (Interview 24, Participant 2 (A))

> I don't think so. I don't have any asthma or anything like that, my blood pressure is good, I exercise, we eat properly, lots of fresh fruit, fruit and vegetables, so I wouldn't have thought I was at risk. In five years' time who knows! (Interview 22, Participant 1 (A))

Several participants struggled with the question as they found the parameters around risk were difficult to determine given the information provided at this point.

> Perhaps there are others who more at risk than us, other groups? But nevertheless we would be, yes. (Interview 7, Participant 2 (B))

> Well, I don't think, even in that article, there's enough information about ovine flu to know who is at risk and who isn't, so it's your own subjective attitudes to whether you would be at risk or not. (Interview 19, Participant 1 (B))

Additionally, there was a sense that risk could not necessarily be categorized along simple yes/no definitive terms.

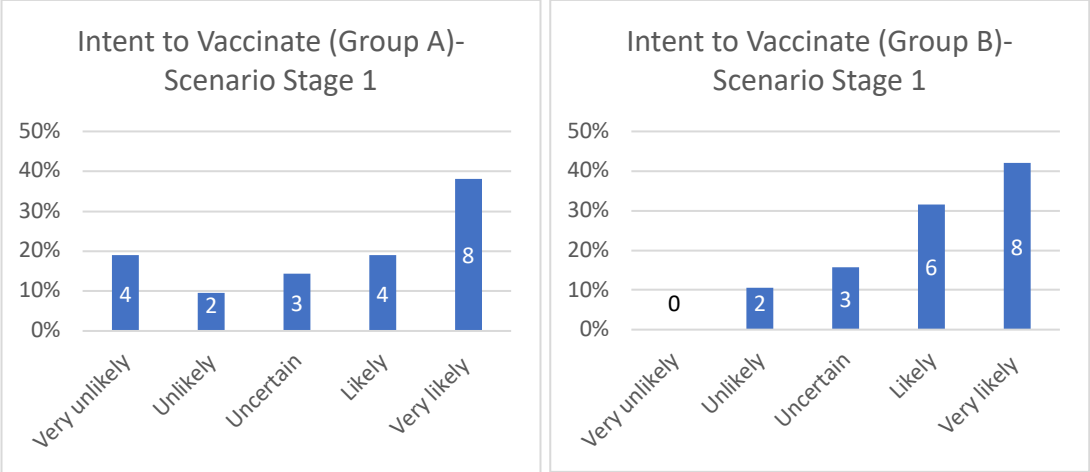
> Yes. Everyone's at risk really, yes. (Interview 23, Participant 1 (B)):

> Well, no… there's not at risk and risk, there's a continuum, I presume and I don't think I'm very far up it. OK, I'm over seventy but I'm in pretty good health otherwise, so… At risk and not at risk assumes some hard barrier which I don't feel comfortable with but I assume I'm at the lower end of the spectrum.' (Interview 10, Participant 1 (B))

8.4.2 Intentions to Vaccinate

At this stage of the scenario, half of Group A participants and three-quarters of Group B participants were either likely or very likely to vaccinate. Furthermore, approximately a quarter of Group A participants and a tenth of Group B participants either unlikely or very unlikely to receive the vaccination (see Figure 8-2).

Figure 8-2 Participant Questionnaire Responses-Intent to Vaccinate-Scenario Stage 1



Intent to vaccinate was driven in large part by whether participants considered the vaccine to be effective. In the discussion, several participants expressed confidence in the effectiveness of vaccination as a preventive measure.

> I always think it's better to protect than it is not to protect. (Interview 3, Participant 2 (B))

> I'm a believer in vaccines in helping to fight all sorts of infections and nasty illnesses all around the world… (Interview 15, Participant 1 (B))

In a similar vein, several participants also expressed a view that, while they weren't certain if the vaccine would necessarily be effective, they felt that, equally, it would do no harm.

> Well that's the feeling that perhaps it's a bit late by then [after a pandemic has started]. But I would probably, yeah, on the grounds that it won't do any harm. (Interview 6, Participant 2 (B))

> Yeah, no harm in taking injection. (Interview 16, Participant 1 (B))

Conversely, for some participants, the effectiveness of vaccination was in doubt and this, in turn, would affect their willingness or intent to vaccinate against a pandemic influenza.

> Well, probably not but I'd need to know how effective it was. If I was told it was 100% effective, which I think you wouldn't be told, but if you were then yeah, sure, if I was offered it. (Interview 1, Participant 1 (A))

> Because I don't think they particularly work! (Interview 8, Participant 2 (A))

Additionally, concern over the safety of the vaccine and the potential for adverse effects, particularly when contrasted with the perception of limited effectiveness, was mentioned as a potential deterrent to vaccination.

> I don't think I should get the vaccination because when I had this injection, I didn't feel anything special except my arm was… my arm was not as flexible as… but it was for some moments. (Interview 11, Participant 2 (A))

> No, I don't believe in that. Because like I just said this year they had this flu thing, injection, and they found out that it's actually not enough for that virus what they have. So it's useless! So why should I go and get injected with something? The last time I got very ill, I put myself at risk to get ill. (Interview 12, Participant 1 (A))

A sense of personal risk or potential susceptibility was identified as an influencing factor in the decision to get vaccinated, particularly in comparison to concerns over safety and efficacy.

> And if I was vulnerable or there's a risk I would take the vaccine. (Interview 22, Participant 1 (A))

> Not unless there was a high risk. I'd also be interested in the history of the vaccine, I was thinking when our children were little, they didn't have this triple whatever it was that kids have? … …So I would like to know a bit more about the origins of the vaccine and the history of the vaccine, whether it was considered completely safe or whether it was a question of… Well, what is more at risk? You dying of this thing or you contracting something else, depending on what it is. (Interview 4, Participant 1 (A))

The role of medical authorities in influencing intent to vaccinate was also referenced by a few participants as a factor in their decision to vaccinate.

> I suppose I still trust the NHS, just about, so I'd want to be precautionary, I don't want to get ill but I don't want to be stupid really, if that's the advice, unless there's good reason why I shouldn't then I would get it, yes. (Interview 20, Participant 1 (A))

> Yeah, well I've got it already this year; every year the doctor writes to me, 'Come and take the flu vaccine', I go and take my flu injection. Yeah, no harm in taking injection.. (Interview 16, Participant 1 (B))

8.4.3 Information needs

As with Phase 1, participants expressed a desire for general information relating to the nature of the pandemic and protective measures. A few participants indicated they would want more information on what pandemic influenza actually is.

> What are the symptoms, what is the difference, how to tell the difference and how to know whether you need start taking antiviral or not? (Interview 14, Participant 2 (A))

> When they use the word pandemic are they using it in a… it's prevalent in a particular place or it is common or everybody has it or every other person has it; what do they mean really by pandemic? (Interview 23, Participant 2 (B))

Several participants wanted to have more information on what measures they could take to reduce the spread and avoid becoming ill.

> Best precautions to take and what to avoid. And possible sources of infection or contamination. For example, if it's an ovine pandemic they might say avoid eating lamb or mutton products and they might also say avoid buying anything new made with wool, because it could be spread on the fleeces. (Interview 17, Participant 1 (A))

> My first reaction, is this ignorance I have about what people mean by pandemic and whether they're just using it as a sort of scare word over and above epidemic or is it just that nobody talks about epidemic anymore and they just talk about pandemic? … …Pleased that the government was doing something about it; wondering about how effective the vaccine will be; wondering about the difference between that vaccine and the one I've already had; wondering how to go about getting the vaccine and whether I… whether it's gonna be long queues and whether I should let people more at risk than me go before me? (Interview 10, Participant 1 (B))

Finally, although participants were relatively consistent in their information needs, there were discrepancies in their preferred information sources.

> Yeah, I'd look for the government… … If it said Daily Mail, I wouldn't even bother looking at it, you know! (Interview 10, Participant 1 (B))

> No, I wouldn't daily or weekly go online to see what the position is with this, you rely on the television news or radio news or newspapers to tell you, or friends and family. Interview 13, Participant 1 (B))

8.5 Stage Two: Vaccine Priority Lists

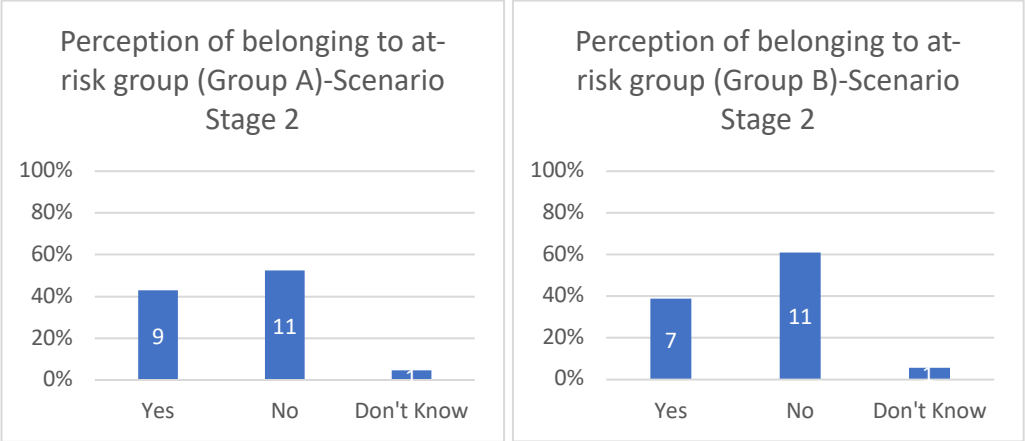
In the second stage of the scenario, participants were provided a leaflet on the pandemic vaccine. The leaflet included general information on the vaccine including vaccine safety as well as a list of priority groups with a brief explanation of the rationale behind the prioritization. An enhanced version of the leaflet was provided to half the participants (Group B). This enhanced leaflet also provided additional information specifically explaining why older adults were not included as part of the priority group. As at Stage One, participants were asked to complete a

short questionnaire on their intention to vaccinate and perceptions of risk at this stage.

8.5.1 Risk Perception

In the second stage of the scenario, participant responses to the questionnaire indicated their perceptions of whether they would be in an at-risk group decreased. Across both groups, less than half of participants indicated they would be at-risk and an increased number of participants felt they were not at risk (see Figure 8-3).

Figure 8-3 Participant Questionnaire Responses -Perception of Belonging to an At-Risk Group-Scenario Stage 2



In the discussion, several participants in both Group A and B were accepting of official advice regarding their risk.

> Well, I have no medical expertise whatsoever, so you have to accept it at face value and if it says that those are the people most at risk, I find it odd, but if it says that they are…well, it's not that odd actually. (Interview 1, Participant 1 (A))

> I thought it'd be reassuring really. I think that's it, I mean you've got to… unless you assume that the only thing that's come out is that they're lying to you…you've got to basically take on that, well they say over 65 unless you're vulnerable so you're less at risk. (Interview 6, Participant 2 (B))

For a few participants being excluded from the at-risk groups would create a lower sense of concern on their part and could reduce uptake of protective behaviours.

> Surprise and relief, I suppose and therefore I'd be unlikely to get a vaccine at that point, very unlikely. (Interview 2, Participant 2 (A))

> Interesting, as it tells me that I am not likely to be affected, I downgrade my sensory perception of it and obviously you'd have to be careful if somebody close to you did catch flu but otherwise I think I would be relatively savoir faire. (Interview 7, Participant 1 (B))

Conversely, a few participants expressed a sense that the recommendation was based less on risk and more on capacity and capability and that, there was the potential that older adults were simply being excluded. Although this view was expressed in both groups, it was more prevalent in Group A.

> Well, it is slightly odd, yes, but if they're not that's great. I mean maybe they just don't mind us all dying off but that's fine too. (Interview 1, Participant 1 (A))

> If you're looking at futures for the population for the planet for existence, if you're looking at futures like that then… what [Interview 14, Participant 1 (A))]'s come out with is that the protection of the young is actually almost more important than somebody who is vulnerable, dependent on it. I mean let's say the government is really, really looking nastily at… without compassion, without empathy, without feeling for survival, if they're really looking at survival, then OK, pregnant women, yes; anyone under 24, yep, that's part of it. Now, if I've got a compromised immune system, which I have, I'm gonna wanna be looked after but I'm actually not gonna be much help if I've got a compromised immune system and we've got a diminished population, our services are completely stretched, no one can really look after me… …It really, really would be quite hard to make those decisions. I suppose you've got to preserve the illusion of looking after the very elderly and vulnerable, but some others might say, 'Let them go'. (Interview 14, Participant 2 (A))

Whilst the advice provided indicated that older adults were less at risk, some participants still felt that they would be in a higher risk category due to pre-existing medical conditions.

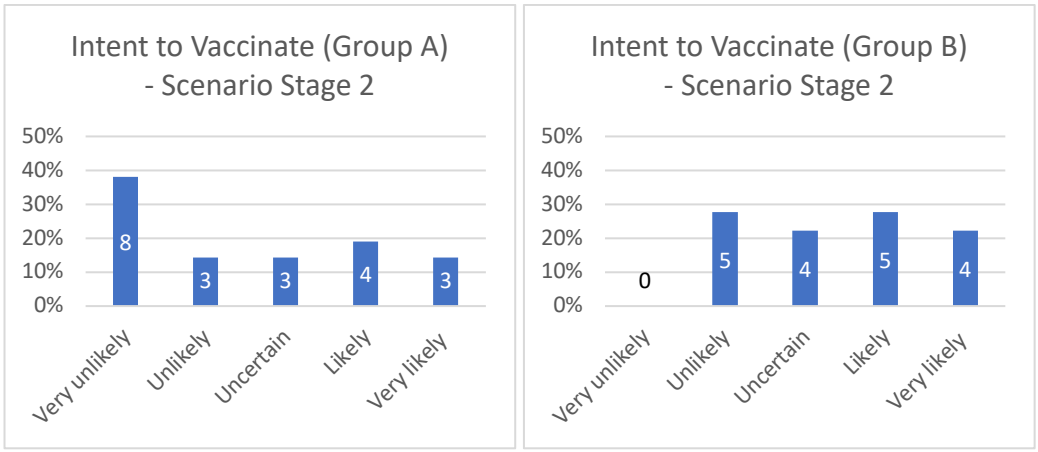
> 'The risk of infection… a person aged 65 or older is less… than the risk of the younger'. But I'd still… because of my illnesses, I would still… (Interview 3, Participant 2 (B))

> Well, no, 'cause it says it's more likely to be younger groups, but I'd put that I could be at risk 'cause I have asthma, I mean very… I don't have it now… cause I take medication but because it's respiratory I would feel that I was at risk. (Interview 9, Participant 1 (B))

8.5.2 Intention to Vaccinate

Participant responses to the questionnaire demonstrated a reduced intention to vaccinate across both groups as compared to Stage One of the scenario. The number of participants who indicated they were either likely or very likely to vaccinate was approximately halved (see Figure 8-4).

Figure 8-4 Participant Questionnaire Responses- Intent to Vaccinate-Scenario Stage Two



The information provided in the leaflet, in particular an understanding and acceptance of risk groups, was referenced by several participants as a key factor in the decision to seek vaccination at this time.

> I would go for it but it sounds as though I wouldn't get it because I wouldn't be part of the at risk group, would I? (Interview 22, Participant 1 (A))

> Well, we're gonna have to be unlikely 'cause we're outside the age group and we're more resistant. (Interview 7, Participant 1 (B))

Some participants in Group B indicated they had specific medical challenges which influenced perception of risk as associated intent to vaccinate.

> Oh, right. Well, after reading that, I don't know you see, because I have got those illnesses, would I still need it being over 64 and got these complaints, should it be something I should be thinking about because this is saying you don't get it so much? (Interview 3, Participant 2 (B))

> See, I'd have to have it because of the respiratory things, so I'd have to. (Interview 3, Participant 1 (B))

A few participants also felt that, whilst they weren't feeling desperate to vaccinate, they would consider vaccination as long as it was made available to them without barriers. A recurring potential barrier for vaccination was cost.

> Because I mean if I had to pay for it I wouldn't take it whereas if it was free… (Interview 2, Participant 1 (A))

> If it was offered to me, yes, but I might equally be prepared to pay for it if it was a really bad pandemic, epidemic. (Interview 7, Participant 2 (B))

Ease of access (or lack thereof) was also identified by one participant as a potential barrier to vaccination.

> Half and half, you know, if I could phone up the doctor and get an appointment and go or walk into the chemist and get one and know it was easy; if I had to keep phoning the doctor I'd think, 'Oh, sod it, I'm alright.' (Interview 10, Participant 1 (B))

8.5.3 Information Needs

Participant information needs at stage two of the scenario focused on risk and process. Where additional information was felt necessary, participants expressed interest in clarification around how the determination of risk was made, the vaccine development process, and vaccine safety. A few participants indicated that they either personally would want or would consider it beneficial to provide further information regarding the decision-making process or rationale behind risk assessments relative to vaccine priority.

> I think given that one accepts information from authorities like this, you know, you're not so suspicious, you don't believe anything because they make it up for their own benefit, given you accept that, it would be interesting, I wouldn't need it but it would be interesting to have a link or something to further information. I mean this must be based on information about the progress of the pandemic in Spain or wherever it is? No, Greece, it was Greece, but just like a link going to a website, say, which shows you the date, a few graphs and things. Because this is to me counter-intuitive that I am not in the at risk group, so one would just like to see the data behind it. (Interview 2, Participant 2 (A))

> They should write it, because of this and that, we did not or we have not… that we have not included this people, this pregnant one whatever. Blah blah. Because it could, it could affect.. reactions between the tablets or the medicine which those people have. Mm. They should write that. (Interview 12, Participant 1 (A))

Several participants in Group B, despite having received the enhanced leaflet, were interested in having additional information explaining why older adults were considered to be less at risk from this particular flu.

> I'd like to know, bearing in mind the experience we have with being at risk for any different flu, why they've decided that this particular flu is less attacking those of the older age groups, it doesn't seem to conform to common sense. (Interview 7, Participant 1 (B))

> Possibly, yeah. I mean why is that the case, why is it over 65s have been excluded from this? (Interview 23, Participant 1 (B))

One participant felt that there was a lack of clarity around the definition of risk in the leaflet.

> Yeah, but it doesn't say, 'cause it wouldn't be part of an at risk group, it doesn't define at risk in terms of severity or likelihood, it just says at risk. Well, I'm at risk 'cause I might get on the train and someone sneezes all over me in a cinema or whatever, 'cause that puts you at risk, you know? (Interview 13, Participant 1 (B))

Effectiveness and safety of the vaccine was highlighted as an area for which some participants would want to have additional information or reassurances.

> I think the effectiveness of the vaccine, and it would be interesting to know why they think babies from 0-6 months and older people over 64 are not at risk. (Interview 1, Participant 1 (A))

> But it's just that, you know, are we automatically giving everybody this vaccine, is it like the flu vaccine or is this an extra one? They've got no mention of what happens if I've already had a flu virus jab this year. Does it say it? OK, got it, but is there any interaction, is there any problem with the two together? (Interview 14, Participant 2 (A))

Additionally, some participants indicated they would want to the reasons behind the need for a priority list in the first place and when older adults would be able to receive the vaccine.

> There would have to be some kind of advice for older people as to why they are not there and when they would be able to be included. (Interview 14, Participant 1 (A))

> I think I'd want to know the rationale behind the priorities. I also, as I said before, how available it is, are they rationing it because there's a shortage or is it just a time thing, how many people they can get through? So yes, a little bit more information? (Interview 24, Participant 3 (A))

Finally, although the leaflet was focused on vaccination, a few participants expressed an interest in receiving additional information regarding the features of the pandemic strain and it's spread.

> And so some way… if there were a few clear indications, markers, that you'd got flu and not just something else, that would be very useful, 'cause how do you know you've got flu and you just haven't got a rotten cold? (Interview 10, Participant 1 (B))

> There's a lot of statistical stuff supporting these contentions here, I'd be interested in the demographics, I'd be interested in the geography, I'd be interested in the size of the thing. (Interview 18, Participant 1 (B))

8.6 Stage Three: Older Adult Turned Away from Vaccination

In the third stage of the scenario, participants in both groups were provided with a newspaper article. In this article, an older adult had been turned away from a vaccination clinic as she was not on the priority list. Participants were also asked to respond to a short questionnaire on their intentions to vaccinate once it became available to them and the acceptability of the decision to exclude older adults from vaccination initially.

8.6.1 Risk Perception

In the third stage of the scenario, several participants indicated that they would feel positively about the risk-based approach to vaccination, as expressed in the leaflet.

> Well, quite confident, yes. I don't suppose it's ever 100% certain that the strategy is the right one. I think that's a very difficult thing for anybody to know or even to prove, certainly without the benefit of hindsight. But I think you would think they were doing their best. (Interview 1, Participant 1 (A))

> I'm sure the government would have done due diligence on what they were about to do for what they're giving out… (Interview 22, Participant 1 (A))

Despite this, there was, however, an increase from stage two, in the number of participants in Group A who attributed the decision to exclude over-65's less on medical assessment of risk and more on capability or capacity.

> And maybe sometimes they have… they probably think that you're over 65 and that you have had your days, you know, sort of thing! It doesn't matter if you're dying early because people are living a lot longer than…a lot longer now and it's costing the NHS a lot of money because people are living a lot older now, so they get rid of them! (Interview 2, Participant 1 (A))

> They say it's more at risk, but apparently they explain it's more at risk there, but for me it's that's just between the lines I read OK, they need it more because they have still a long journey in front of them. I'm cynical about that but I think it's, there is a lot because I am more at risk, the metabolisms ... people over 65 and their metabolism are not as strong as the… from about risk they are as much at risk as the younger ones, but they don't need it as much. They're on a journey. We have to be a community so we think of them, for the vaccine it's like OK, if I have to die my son or I, let me die first, because I believe… yeah, that's my philosophy of life. (Interview 11, Participant 2 (A))

This perception of a utilitarian-based decision making process, provoked a sense of resignation around being excluded for some participants.

> Well, if younger people are more susceptible because they haven't had things and younger people are the ones who are going to be growing and paying the taxes to keep those in government well paid and for those extremely generous pension

> schemes that they have, it's the government who sets it so I can see why they would do that, because they'd pick on the ones who will be working, the future generations and the workers, who are paying taxes, so if you're retired then… (Interview 22, Participant 1 (A))

> It's never explicitly stated but it is there, and that would just reflect that, when you get to a certain age then you can expect a reduction in the treatment that you might expect if you're younger. (Interview 24, Participant 2 (A))

Additionally, whilst many participants were accepting or, at least, resigned to a perceived utility-driven decision-making process, a few participants took a very negative view of the exclusion criteria.

> And maybe sometimes they have… they probably think that you're over 65 and that you have had your days, you know, sort of thing! It doesn't matter if you're dying early because people are living a lot longer than… a lot longer now and it's costing the NHS a lot of money because people are living a lot older now, so they get rid of them! (Interview 2, Participant 1 (A))

> I would feel extremely insulted because I'd feel undervalued. (Interview 17, Participant 1 (A))

As with Group A, several participants in Group B expressed their support for the risk-based approach to vaccination, as outlined in the leaflet.

> I thought it'd be reassuring really. I think that's it, I mean you've got to unless you assume that the only thing that's come out is that they're lying to you (Interview 6, Participant 2 (B))

> Yeah, it is more than reasonable, it's the only morally correct thing to do if you haven't got enough you have to give it to the high risk people. That's stronger than reasonable, isn't it, it's what ought to have done. (Interview 10, Participant 1 (B))

Although many participants in Group B perceived the decision to be based on risk, a few still had questions, and opposition to the vaccine priority list tended to be framed in the context of questioning the medical validity of the information provided.

> No, I think it's unreasonable because it goes contrary to all evidence that we've been presented with in terms of taking our annual flu jab and while the ovine flu or whatever they're talking about may well be in pandemic form, flu is flu. (Interview 7, Participant 1 (B))

> I was explaining that I thought it would be detrimental to the health service not to protect the very elderly because they wouldn't have enough beds to cope, they haven't now, but I mean it would be ten times worse. (Interview 7, Participant 2 (B))

Conversely, for a few participants, support of the decision was framed within the context of either external advice or, as in Group A, a sense of acceptance of a utilitarian approach.

> Yeah. Yes, I think so. This would all be done through my GP so I would try and get his support or find out what his support of it was on that. (Interview 19, Participant 1 (B))

> - and it's important that this group get them because they're young and growing and that lot had a go, you know? (Interview 23, Participant 1 (B))

Some participants also expressed a sense that the risk for younger adults was, perhaps, the result of lifestyle rather than medical risk.

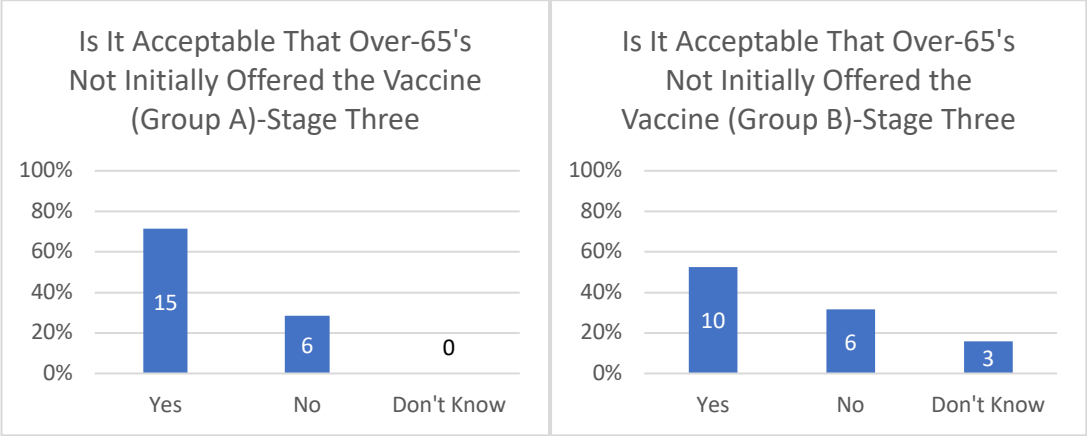
> I think perhaps less people get it because they don't tend to go out and mix as much in the same way that younger people do, if you're going to clubs and dancing and dancing around and moving around, I think you're far more likely to catch something than just sitting in a little meeting for older people where nobody gets up and moves and not so many people go. (Interview 15, Participant 1 (B))

> …but I certainly think a pensioner of any age should have got a greater… possibly, probably, even, more likely to catch flu than teenagers. But having said that, I know this lady is… you see, people in their 80s aren't as likely to be going on crowded trains, crowded underground, crowded buses, that reduces the risk on them. But an old lady with flu compared to the 20-year-old with flu she might be… she's just as likely to get over the…perhaps less likely to get over the flu than a much younger person having it, I think. (Interview 13, Participant 1 (B))

8.6.2 Acceptability of Government Decision Not To Prioritize Over-65's

In the third stage of the scenario, participants were asked respond to a questionnaire indicating whether they felt it was acceptable that older adults were initially excluded from the vaccination programme. A majority of participants in both groups expressed that this was acceptable though, despite having received the enhanced leaflet, participants in Group B were less likely to view this as acceptable (See Figure 8-5).

Figure 8-5 Participant Questionnaire Responses- Acceptability of Initial Exclusion of Older Adults from Vaccination



For many participants in Group A, the underlying assumption was that the decision to not to provide the vaccine to over 65-year olds was based less on medical advice around risk and more from a pragmatic, resource based approach. This was quite distressing to some participants.

> I think that's outrageous because they're quick enough to take money off us for bills and taxes, and you don't get a free TV licence until you're over 75, so if they're still charging us for a TV licence and they're still charging us for all the utilities and we're trying to make ends meet on pensions and we're trying to economise, plus we're actually valuable members of the community because we're living, historical sources, making us feel that we don't matter is not the right way to make us go out to the ballot box and vote. And we're the ones most likely to vote, besides which, bearing in mind our head of state and her consort happen to be in their nineties… I'm sure there'll be a flu jab available for them, so why shouldn't we get the same treatment? (Interview 17, Participant 1 (A))

> The article I think is not acceptable and it shouldn't mean refusing anyone over that age, that age bracket, they shouldn't refuse to give them the vaccine once they've turned up for it. (Interview 2, Participant 1 (A))

Conversely, several participants expressed the view that they were accepting, if not supportive, of the policy, due to pragmatic reasons around limited resources and the resulting need to make difficult decisions.

> It's a simple case of there's not enough to go round so you have to ration it. If she gets it somebody else is not getting it, so who are you going to put… She might be getting it, she's only got a few years to live perhaps, whereas a child of five with their whole life ahead of them might not get it because she's had it. (Interview 22, Participant 1 (A))

> Because it's limited and so I think it is more important that children get it and working adults. So you've got to have the emergency services, after the children, presumably, and then other young adults who are…(Interview 24, Participant 3 (A)):

> So the economy and the rest of the country keeps going because we are expendable. (Interview 24, Participant 1 (A))

A few Group A participants did assess the acceptability of the vaccine restriction on the grounds of risk as outlined in the leaflet and reinforced in quotes from the news article provided at the third stage.

> I'm very trusting, I think it's because they're not at risk or they're less at risk. (Interview 4, Participant 1 (A))

> Yeah, if what they're [information provided on the leaflet] saying is correct and the government agree with it, yeah, I would see no problem on going that route. (Interview 22, Participant 1 (A))

Although a lower number of participants in Group B (53%) felt it was acceptable that over-65's were not initially offered the vaccine the reasons many participants gave for not finding this acceptable seemed to centre less on perceptions of risk or utility and more on the issue of compassion.

> Well, I'm horrified by the lack of decision or the perceived lack of decision of an old lady who feels she's at risk and is effectively given the brush off both locally and by the health service… (Interview 7, Participant 1 (B))

> That's rubbish! No, if an old person goes into any place looking for a vaccination for something, then my assumption is that they would be given it because I don't think anyone, any reasonable person, would assume that you'd be getting queues 10 miles long of people aged 65 looking for a vaccination for something. And the numbers… she's obviously got a thing about becoming ill with Spanish flu and so on, so she's got concerns which are unusual and medical services should be flexible enough to deal with that, they'd just give her the vaccination. (Interview 18, Participant 1 (B))

Support for the position tended to be based in confidence that the decision was medically sound, or that there would be some flexibility within the position.

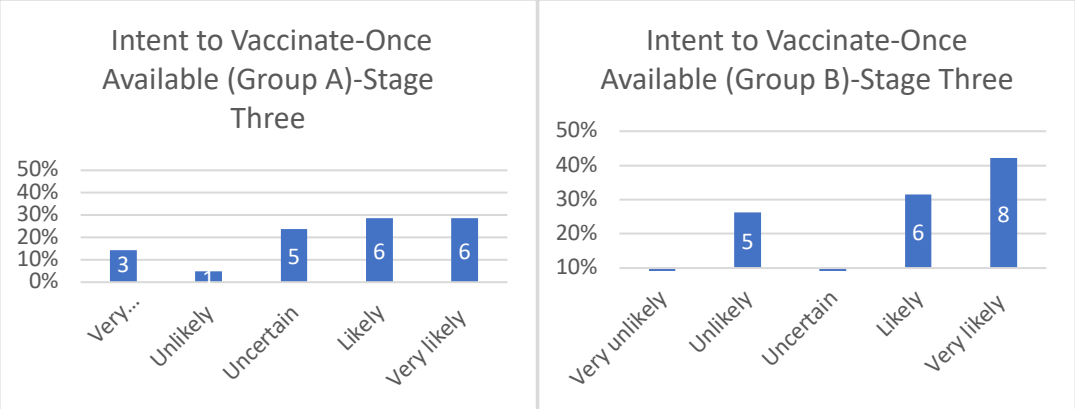
> No, that's a fair comment, obviously they've done the research on it, on their little mice and everything else that they do and obviously seen that for the older mice it wasn't really necessary and they can see that what's happening will affect certain age groups. And there's some other things they've done for younger ones in the past where it's been not for the older people, for the younger ones, maybe because we've got the good 'ol immunes in us… (Interview 9, Participant 2 (B))

> I think so, if they think it's only really the young ones that need to have it then I think that's fine. I think if you were over 65 and your GP felt you needed to have it… you could ask and if he felt you needed to have it because of any other underlying conditions then he'd say have it. (Interview 9, Participant 1 (B))

8.6.3 Intention to Vaccinate-Once a Vaccine Becomes Available

As with previous stages of the scenario, participants were given a questionnaire to determine their intention to vaccinate, in this case, once a vaccine became available. In both groups, intent to vaccinate increased as compared to stage two. The number of participants indicating they would be likely or very likely to vaccinate returned to stage one levels (See Figure 8-6).

Figure 8-6 Participant Questionnaire Responses- Intent to Vaccinate-Once Available -Stage Three



Effectiveness, perceived risk and medical advice were the main commented-upon drivers for Group A participants in the decision to seek vaccination at this time. Effectiveness, in this context, refers to both the effectiveness of vaccination writ large as well as the perceived effectiveness of the particular pandemic vaccine.

> Well, that's what I'm uncertain, again, it would depend very much on the effectiveness. (Interview 1, Participant 1 (A))

> Well, common sense, if there's a pandemic and there's a vaccine available, better to be safe than sorry, especially when you're in an at risk category. (Interview 17, Participant 1 (A))

Risk continued to be viewed as a deciding factor in opting for vaccination however, unlike the first stage where a higher perception of risk was likely to prompt individuals to act, at this third stage, some participants felt their risk to reward/effort calculation might fall more firmly on the side of skipping the vaccination.

> I'm not sure whether I would if I wasn't at risk? I'm not that keen on vaccine and dosing yourself up with stuff if you don't need, I think it's best not to take it. It's better to eat healthily and to look after yourself. If there is a risk, yeah, but would I do it, I dunno, I might, but I wouldn't be desperate to. (Interview 4, Participant 1 (A))

> As long as there was no restriction on it, yes I would. Unless I thought well I've gone six months now, picking my grandchildren up, I haven't caught it … (Interview 24, Participant 1 (A))

Finally, some participants indicated they would be swayed by the advice of their GP or by other medical experts.

> If the doctor was that that way you would… I mean I know my doctor would if he would say, you go and have it. Whatever your doctor would say, innit? It' s all down to the medical… It's not down to us really. (Interview 8, Participant 3 (A))

> Yes…if they come to me…There are plenty of vaccines so lets can people of all ages. Uncertain, maybe I would go, a bit later, for that. (Interview 11, Participant 2 (A))

As with Group A participants, a primary motivation behind the desire to vaccinate for Group B participants was the sense that vaccination was an effective means of preventing illness or, at least, reducing the likelihood of becoming ill.

> I think I probably would, again, it's that thing of well if I don't and I got it then I'd think, you know…it's a bit like I always panic about taking out holiday insurance, because if I did end up in hospital or had to be repatri…. I think it is literally of the same model as insurance, that you start actually worrying that, well, if I don't do it and I got it and then… (Interview 6, Participant 1 (B))

> Yeah, probably, if it was easy. … …Same answer as before, to reduce my probability of getting the disease and a little bit of thinking I'd done the right thing, sort of not procrastinating. It's not about the outcome, it's about me, it's about I've actually gone and done what I ought to do, I've done my duty kind of thing! (Interview 10, Participant 1 (B))

In addition, participants expressed a sense of confidence in their decision making around health, commenting that if the vaccine was being offered, this was probably with good reason.

> Well, if they're good enough to offer it then you should have it. (Interview 9, Participant 1 (B))

> Because I believe the government strategy, if they are offering vaccine to somebody who's over 65 that suggests that it should be of use to them. (Interview 19, Participant 1 (B))

Conversely, for a few participants the decision to not have the vaccine was driven by a sense that the vaccine would serve no real purpose and confer no particular health benefit.

> It's a soft data situation, the vaccination itself can cause you a problem and it might not protect you at all from the invasive agent that it's supposed to act against. It's a very difficult area. (Interview 6, Participant 3 (B))

> I think that my personal system of preventing myself getting infected has worked pretty well for 77 years, I don't expect it to stop working unless I'm… If I'm hospitalised then I'd probably accept vaccination because hospitals are… They're full of sick people, have you noticed that?! (Interview 18, Participant 1 (B))

8.6.4 Information Needs

In the third stage of the scenario, Group A participant information needs were heavily focused around a desire for additional information relating to the vaccine priority list and the initial exclusion of older adults.

> Yes, I think you do need more information, it would be good to know why, I mean as we said before, why they think that people over 64 are not at higher risk than the average member of the population. But I don't have a problem with rationing as such, you know, there's no money tree, the NHS doesn't have unlimited resources and nor do they ever have unlimited flu vaccine. So I think rationing is a perfectly reasonable way to deal with it.- (Interview 1, Participant 1 (A))

> It is a tremendous generalisation and I wouldn't know why really, what research they've done, that comes to that conclusion. Some people don't go out much 'cause they're more housebound, as you get older you get more housebound, so therefore you probably would be less at risk 'cause you're not mingling with people. If you can keep your own little sterile area then…so you're not going out every day, on public transport every day and mingling with people at work and so on, so from that point of view I think they would be less at risk, except that if you were in contact with small children, then you're not, because they tend to give you thing! So it is a bit of a generalisation but I'd want to know more information about why they said that. (Interview 20, Participant 1 (A))

As with Group A participants and, as in the previous scenario stage, a few participants in Group B expressed an interest in receiving greater clarification as to how the risk groups were determined.

> It's the same as the other one, they need more information about why over-65s are at less risk, it just says that they are but it needs to be a bit more than that, because we've always been told that that's the age at which you're elderly and at risk of everything, so…except flu! It doesn't seem that likely, does it, really? (Interview 15, Participant 1 (B))

> And figure it out, to what extent it's a… price… no, a precise kind of division of at risk. You know, you've lived 65, does something magic happen after that? Why not 64 or… just a pensioner, 65 for a pensioner, so I suppose…? (Interview 13, Participant 1 (B))

Although the type of information requested by participants in both groups was consistent, Group A participants were more likely to express a desire for this information than Group B participants.

8.7 Behavioural Intentions other than Vaccination

As in the first phase of the scenario, participants were asked to discuss their perspectives on the behaviours being studied (hand hygiene, isolation, respiratory hygiene, seeking medical assistance, and vaccination). As the scenario revolved around vaccination, participant views on these behaviours were covered throughout the discussion of the scenario.

8.7.1 Hand Hygiene

Handwashing and the use of gels was predominantly viewed as an effective means to prevent infection.

> Your hands catch all sorts of things off the objects that you have touched, so… bacteria can go through your hands and so you have then washed, where if you touch your eyes or something… I suppose to get infected or something. (Interview 11, Participant 2 (A))

> Why wash the hands? Well, I think… I understand that even if it's in cold water it removes a lot of the stuff which is on the surface so that's what I'd probably do (Interview 4, Participant 1 (A))

However, despite this, one participant did express doubts in the usefulness of hand gels.

> I used to [carry gel] but I always assumed it didn't really do any good. They even say the hospital gels aren't particularly… (Interview 24, Participant 3 (A))

Despite this, many participants identified the use of hand gels as a way to keep their hands clean even when outside the home or away from a sink, though perhaps one which could be expanded.

> Yeah, handwashing, again make sure you have some at home and if you go out make sure that you wash your hands and you use the antibacterial gel.(Interview 2, Participant 1 (A))

> We've been on lots of cruises, that's our fun thing now, and they had hand wipes at every possible station; they were very diligent with that and the captain said at the end, 'We've been very successful on this trip, nobody has caught anything', and what not and he put it down to the hands. And that's obviously a thing that could be…I don't know how you'd introduce a thing like that in shops and things? But it did seem to work because everything you touch, money, paper, anything... (Interview 23, Participant 1 (B))

Participants did not express concern that there would be particular barriers to handwashing or using hand gel.

> It's hands, I think, this is the thing I'm most concerned about, I'd wash my hands more than I do and I'd avoid touching things, particularly public transport… (Interview 10, Participant 1 (B))

> You have to hand wash every time, the bacteria and things, because you touching doors, you're touching the bus when you go in, you're touching the seat. Other people have that…it is spreading everywhere. So if it's an epidemic you have to be really careful. (Interview 12, Participant 1 (A))

Similarly, participants expressed the view that handwashing is a behaviour that is already being done and, something that should be done regardless of a potential pandemic.

> People should already be… hand washing we should already be doing really, since it should be a habit. Really people do need reminding (Interview 6, Participant 2 (B))

> Of course, but you do that anyway. I mean if you wash your hands anyway there's no point in washing them twice, if you see what I mean? (Interview 1, Participant 1 (A))

Some participants also identified the role that public health guidance could play in encouraging the adoption of hand washing behaviour in a pandemic.

> If I were advised I would but is not influenza transmitted through sneezing and breathing in rather than touching anyone? (Interview 2, Participant 2 (A))
> No, but if there are public health practices which say do that, then I guess I'd be frightened enough to do it, not frightened but concerned enough. (Interview 2, Participant 2 (A))

> I think… apart from the everyday routine, people should be asked to wash their hands every five minutes (Interview 11, Participant 2 (A))

Participant responses in Phase two of the research echo those of Phase one older adult participants who felt that handwashing was an efficacious behaviour with relatively few barriers to adoption.

8.7.2 Isolation

Participants were generally positively predisposed to isolation, in so far as possible, in that, for most, there was a sense that this would be a behaviour they could adopt.

> Eat sensibly, not going in contact with people that you know are unwell and as I said before, be a bit circumspect about public transport. I certainly would curtail my activities if it was really bad, not be swanning off on buses and tubes quite so much, initially anyway, to see what was going on, so it's that sort of thing. (Interview 20, Participant 1 (A))

> Well…I will not make too much contact where so many peoples are, I wouldn't go to crowded places, I would stay away, and keep warm, stay more or less in my house, just do the most necessary things, go shopping, go here, but I wouldn't mix with so many people. (Interview 12, Participant 1 (A))

Several participants felt that, by nature of being older and, consequently, retired, they would be in a better position to avoid unnecessary exposure to crowds and potentially larger numbers of infected individuals.

> Well, I suppose if you can you could avoid going on crowded buses and tubes where everybody coughs and sneezes in your face, but it's quite easy for me to avoid, I can walk most places… it's not a problem for me personally. And for the people who can't avoid it… what can they do? I mean you might marginally change your behaviour but most people are not in a position to change their behaviour entirely I don't think. (Interview 1, Participant 1 (A))

> Well, the main one is to avoid crowds if you can, but if you have to go to work, for instance, on the train or bus that's a problem 'cause the trains and buses are, I think, probably where you catch things. But if you're retired like us you would probably stay at home, as much as you can. (Interview 23, Participant 2 (B))

Many participants did, however, indicate that they would take steps and plan in order to avoid areas that might present more of a risk of exposure.

> Avoiding crowds of people, avoid going on the trains or underground in rush hours. Just those things really, just try and avoid crowds 'cause you don't know who's got it! (Interview 13, Participant 1 (B))

> It might make a difference in the company I kept, I'd keep away from crowds, things like the underground I think are very bad, well, the trains can be bad but I know… One reason at the moment I think, as I'm… well, I've stopped going on trains for the moment. The place I first stopped going on trains was Holborn because when you get off the train it's so crowded when you get up those stairs and places like that, and you can only go slowly and that's a no-no situation for me. I'd keep away from people who are sneezing or people showing any signs; it's not just a runny nose, it's coughing and sneezing you have to watch, isn't it? (Interview 15, Participant 1 (B))

This however, did not apply universally as one participant indicated that existing commitments coupled with financial constraints would affect his ability to isolate himself.

> Well, it depends how much it might be influencing what my commitments were over the next month or so. I mean I've said I'm retired but musicians never retire, you know? I'm playing for services every Sunday morning so that's… no, and I still teach and I play for a carol service on Monday so it depends. If it would stop me going to mix with a congregation of three or four-hundred, as I did on Monday morning, I don't think it would stop me going into that sort of…if I knew enough in advance about it to wear a face mask like people did in Hong Kong then I might be tempted to do that, but I don't think it would make me cancel all my engagements, because I'm still dependent on an income, I'm not financially secure to just do nothing. (Interview 19, Participant 1 (B))

As in the first phase of the research, older adult participants continued to indicate measured support for isolation as a preventive measure though challenges were identified around curtailing regular activities such as financial commitments or shopping.

8.7.3 Respiratory Hygiene

Participants supported the view that exercising proper respiratory hygiene is an effective way to prevent the spread of illness. Additionally, for some, there was also a sense that, the failure to adopt this behavior would be impolite.

> Alright, I wasn't in the War but I remember the adverts saying, spitting spreads diseases… sneezing and all that, it's drummed into us, do this to protect yourself, but kids aren't taught anything like that. (Interview 3, Participant 2 (B))

> But someone that happened to be on the crowded half-past-seven train from Worcester Park to London or whatever, you know, you're likely, possibly to be next to somebody and lots of people don't bother to get out a handkerchief and just sneeze. (Interview 13, Participant 1 (B))

Although there was a broad sense amongst participants that respiratory hygiene was a helpful and protective behaviour, participants were divided between those who were confident in their current actions and those who felt that more precaution could be required during a pandemic.

> Well, of course, but you would do that anyway. (Interview 1, Participant 1 (A))

> Yeah. I should be more careful of all of that and I should always carry a tissue and be careful if I come… I don't know, to be honest, if I am that good about all that, I'll always try and prevent spreading it. (Interview 4, Participant 1 (A))

Several participants expressed the view that a cultural or generational shift had occurred wherein the 'other' were much less likely to use proper respiratory hygiene.

> I think when I was young the health service or whatever would put advertisements on the television like, coughs and sneezes spread diseases, and our parents… it came down as a cultural view where you don't sneeze in the open. Nowadays I see people sneeze openly and I don't see any advertising of any sort that says this is not a good thing. I was disgusted the other day when I saw somebody leaning over the food stored in the supermarket… then going achoo. I'm absolutely amazed that anyone would not think that this is not a good thing. (Interview 22, Participant 1 (A))

> No, but the thing is you see so many people, don't you, on buses and things, and they sit there and cough, without hands, you know, no hands or anything… (Interview 3, Participant 1 (B))

Accessibility of tissues or handkerchiefs was reiterated as something that individuals need to be prepared.

> You can never get to a paper unless you're sitting with a pile of things by your hand, I might use my hand but I wouldn't use my sleeve, I don't think, and then obviously try and wash them as soon as you can, and be extra careful about washing hands generally… (Interview 15, Participant 1 (B))

> I'm aware of that campaign [Catch it, Bin it, Kill it] and I agree with that campaign and I try to remember to observe that campaign. I personally carry a handkerchief but I make sure that the handkerchief that I've been using goes into the appropriate place for washing and cleaning and I've got another one in the other pocket which I now can use, so if need a handkerchief I'd just take it out and give you a clean handkerchief, which I can always do. Tissues tend to just get thrown all over the place, although I would prefer people to be sneezing into a tissue rather than covering me with their germs. (Interview 18, Participant 1 (B))

Older adult participants in this phase were in line with those of Phase One. Participants were supportive of the behaviour as a means to prevent the transmission of disease but also expressed the view that 'others' were less likely to adopt this measure. Practical challenges around preparedness (ie: having a tissue at the ready) were identified, as with the participants in the earlier studies.

8.7.4 Seeking Medical Assistance

When asked if they would seek medical assistance if ill, participants were largely in agreement that they would, however, the process of doing so varied greatly. For some participants the GP remained the primary port-of-call.

> Most definitely, yes, and if there was something going about of course you would be alerted by it, so make sure that you go to your doctor, you can ask him questions… because the doctor will give you the necessary information. (Interview 2, Participant 1 (A))

> Yeah, if I felt I was really ill, yes and they need to deal with the symptoms, because presumably that's how people end up in hospital 'cause the symptoms need to be treated and things like being hydrated. (Interview 6, Participant 2 (B))

The severity of illness was considered by some participants to be a determining factor in whether to seek medical assistance.

> Probably not immediately unless I thought it was that, if I thought it was that I would. But I might… it could be anything, it could be just ordinary flu, it could be just a cold, because that happens even now, but if I thought it was I certainly would seek medical assistance, yeah. (Interview 4, Participant 1 (A))

> Depending on how ill you were. (Interview 3, Participant 1 (B))

A recurring theme was the potential inability of medical services to keep up, with some participants expressing concern that, despite contacting the GP, they would be left waiting.

> Yeah, you turn to the doctor but whether you'd get any response, that's another thing. (Interview 8, Participant 2 (A))

> The GPs are overloaded as it is and they will not be able to cope and it would be unadvisable for people to go to hospital at the moment. Hospitals are known as places of infection. And the GP surgery will become a place of infection. (Interview 14, Participant 2 (A))

Finally, some participants expressed the view that they would already be aware of what the advice would be so there would simply be no point in contacting the medical authorities.

> Not sure what they can do for flu. (Interview 24, Participant 3 (A))
> They advise you not to, don't they, with flu? I mean their advice is basically stay at home, keep warm, go to bed. (Interview 24, Participant 2 (A))

> I might do, but there probably would've been so much publicity already about what to do: stay indoors; drink plenty of fluids; take paracetamol. So you probably wouldn't need to ring the GP. (Interview 9, Participant 1 (B))

Participants were generally open to the idea of using a National Pandemic Flu Service. Participants who were more positive about the service commented less on the Flu Service itself and more on their desire to have all possible information in the event of a pandemic.

> Yeah, I'd take the opportunity, anything that is open, any advice they tell you to take I'd take it and take the necessary precautions. (Interview 2, Participant 1 (A))

> If I had reason to think that either myself or my partner were suffering that particular disorder then I would use anything to get more information, so if I knew there was a website dedicated to that, then I would use it straightaway. (Interview 18, Participant 1 (B))

On the other hand, individuals who were less inclined to use the service pointed to concerns over efficiency and effectiveness.

> I might, yes, I would look online. The only trouble with a lot of those things, especially government services, is you might spend quarter-of-an-hour, 20 minutes, just going through the waiting stages, they're usually badly manned, they're not sufficiently manned… (Interview 22, Participant 1 (A))

> Probably not, 'cause I've been around a long time so I know what flu is, so no, I wouldn't. (Interview 13, Participant 1 (B))

Although some participants expressed a willingness to use an internet-based service, there was a marked preference toward the use of a phone line. Reasons for this centered around a lack of technological access or capacity and a desire to speak to someone.

> Well the dedicated website is fine but [FGOA-08-01] hasn't got a computer. You've got to realise that not everybody has got a computer. (Interview 8, Participant 2 (A))

> I think I'd prefer to use the phone line but if it was a long wait I'd use the website. I mean I usually prefer to talk to somebody when I can. (Interview 1, Participant 1 (A))

Wait times, as referenced above, were singled out as a particular deterrent to the use of the phone line, with two participants specifically referencing being put on hold, as barrier to use.

> I might well use the telephone one, as I say, if it were sort of… because you'd think getting a GP's appointment, forget it, you know? So I think the telephone one might providing they're not playing Vivaldi at you for ten minutes while you're waiting to get through (Interview 6, Participant 1 (B))

> They dial, use the telephone, dial whatever the number is, they're played Vivaldi's Four Seasons for hours on end, they get fed up, and so in a sense their ability to get access to that information could be … not saying it would be but it could be very, very difficult. (Interview 24, Participant 2 (A))

The use of a website as a sole means of contact was preferred by a few participants due to the comparative ease of access along with the ability to take the time to fully comprehend the information.

> Oh no, the website, mind you I'm pretty damn good on technology, but on a pandemic the phones would be blocked, wouldn't they? Mind you, so would the other one. So I don't know. A good question. I'd most probably have to go through the internet, try and find out what to do. (Interview 22, Participant 1 (A))

> …you've got the information to read at your own leisure, read through the symptoms rather than on the end of a phone, you can only take in bits and pieces. (Interview 9, Participant 3 (B))

Conversely, several participants indicated they would be keen to use a combination of the website and phone as this would allow them to get all the information necessary to formulate targeted questions while on the phone with someone.

> Probably the website first, 'cause then you could sort of read through and think, 'What didn't I understand about this and what do I need to ask?' so that when you had a phone conversation you could ask the questions you really wanted to ask.

(Interview 10, Participant 1 (B))

> I can use a website quite easily but I like to be able to speak to someone, especially something like that, 'cause there's always a little thing, you think, 'Does that mean this or does it mean that?' and if you speak to someone personally you can do that. I would quite often look on a website first and then follow it up but sometimes you can get the information that you need off there and you don't need to phone. (Interview 15, Participant 1 (B))

Participant views on seeking medical assistance mirror those of their Phase One counterparts. The instinctive choice of a GP as primary contact was also referenced in the earlier studies. Willingness to use a National Pandemic Flu Service was also similar though slightly more participants in the second phase of research indicated a preference for using a website over a phone line.

8.8 Communication

8.8.1 Trusted Sources

As with the first phase of older adult interviews, participant responses in pre-discussion questionnaires indicate a preference for traditional news sources (ie: television and radio) over new media though participants in the second phase were much more inclined to use online sources of information. Similarly, health care professionals were overwhelmingly the most frequently cited source of medical information amongst participants (See Figure 8-7).

Figure 8-7 Day-to-Day News Sources- Older Adults (Phase Two)

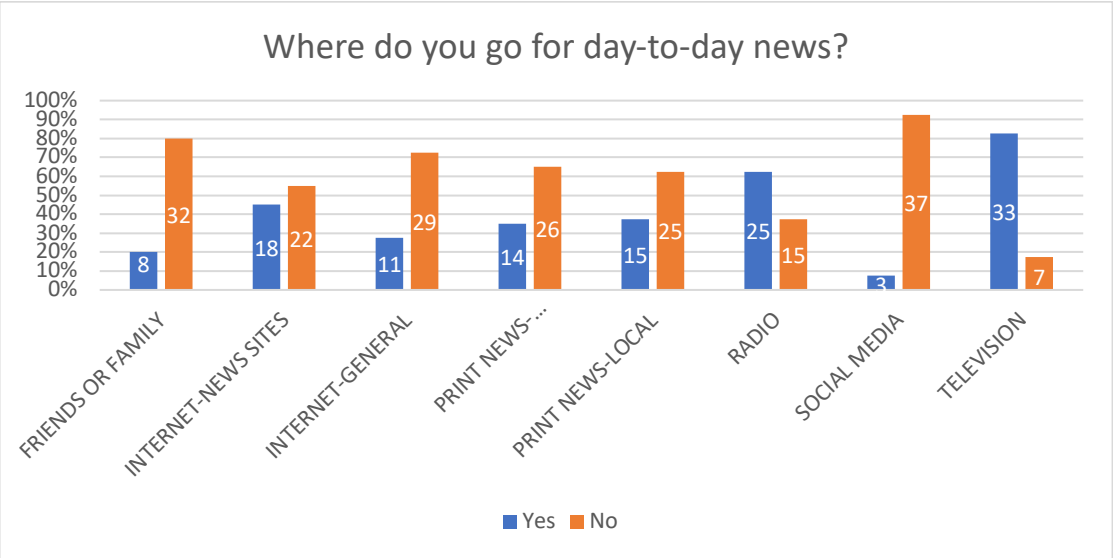
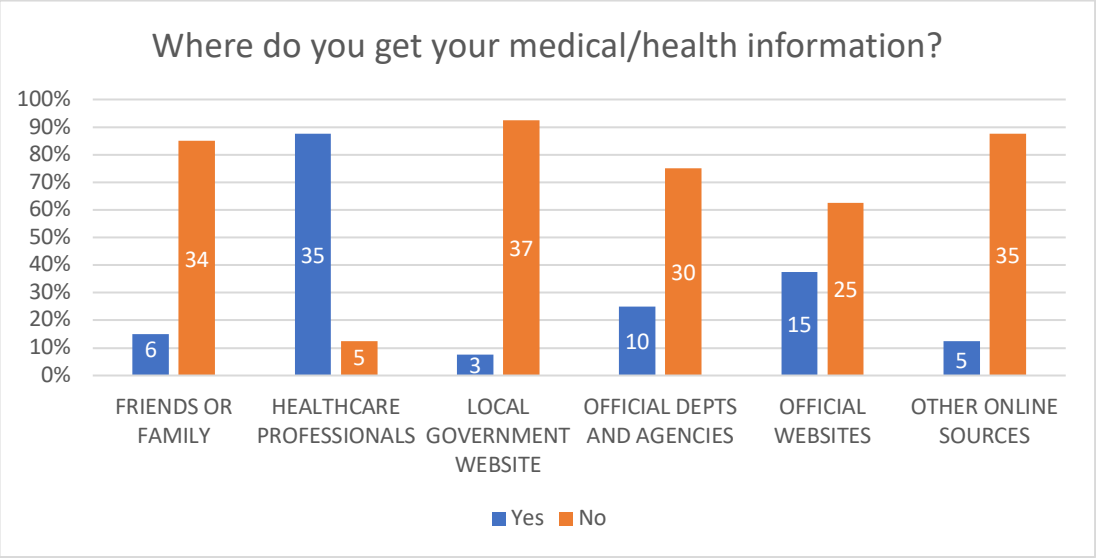


Figure 8-8 Medical Information Sources-Older Adults (Phase Two)



Veracity or reliability of information was identified as a potential communication issue. Traditional news media and government information were often perceived to be fairly reliable however, with online news or information sources, there remains a challenge in determining what may or may not be reliable or credible.

> It's the same for me, in the reputable press and reputable broadcasting organisations, one would expect a reasonably neutral view of the reality, but on top of that one would expect things like NHS websites to have extensive material, you know, more than you can get out of even a newspaper article. (Interview 2, Participant 2 (A))

> The internet, on the gov thing, you know, that… you can go on the government thing? You should be able to find out about it there. (Interview 3, Participant 1 (B))

Some participants identified that, with online news or information sources, there remains a challenge in determining what may or may not be reliable or credible.

> So now we come to fake news, OK, and how people would know, especially elderly people, if it's fake news or not (Interview 14, Participant 2 (A))

> It depends because Wikipedia tends to be general information, perhaps not immediately up to the minute, so I would type in the influenza of the day and see what comes up and it could be NHS, it could be websites relating thereto, and then I would investigate them in more detail and see who's trying to sell me flu medicines and who's actually giving information. (Interview 7, Participant 1 (B))

In the discussion, participants were divided as to whether government would be considered to be a trusted source of information. As with the first set of interviews,

concerns around credibility were centred on the distinction between politicians and the government at large.

> Well, that's tricky, that's very tricky- who can you trust? I think we kind of have to trust the government sources, assuming that they have the resources to come up with the best answers knowing that the best answers may not be always the right answers. But I guess they're in a better position than, I don't know… who else can do the research that would need to be done? (Interview 1, Participant 1 (A))

> I mean it is actually the responsibility of government, to be honest and straightforward, but we all know what politicians are like! (Interview 24, Participant 2 (A))

As with government, confidence in the media varied depending on the source. Several participants indicated that they would perceive newspapers as somewhat less reliable due to a tendency to sensationalise.

> Yes, but immediately I would believe things differently if I saw it from a tabloid like The Sun, there would be some sort of sensationalism in my mind. (Interview 20, Participant 1 (A))

> Some newspapers in particular, you see the headlines and they can be quite hysterical. (Interview 24, Participant 3 (A))
> Looking at the BBC website the other day I clicked on what the newspapers front-pages are and there was big hysterical front page on the Daily Express about flu from Australia is going to hit Britain kind of thing. And I thought… (Interview 24, Participant 2 (A))
> Is that before or after the big freeze or another Diana conspiracy? (Interview 24, Participant 3 (A))

GPs, in contrast, were broadly considered to be a trusted source of authority as well as a first contact in the event of an emergency.

> The doctor would be my choice really. Not having even thought about this my first choice would be my nephew is a doctor, to phone him up or to talk to a doctor or my local doctor or to a clinic to say, 'Hey, what do I do from here?' (Interview 22, Participant 1 (A))

> They know you and they know what's wrong with you, in your case, and they will give you information that is good, I think. (Interview 3, Participant 2 (B))

For others, whilst the GP might be a preferred source of information, logistical constraints might prompt an alternative approach such as the chemist or A&E.

> Well, my GP is a bus ride away so I'd either phone up the surgery or go to the chemist. The chemist is nearby so it's easy, go and see your pharmacist rather than go all the way and bother the doctor. (Interview 17, Participant 1 (A))

> Well, there's two ways that we would do it, we would go to our doctor in the first instance, if we found that the doctor was overwhelmed we would probably go to

A&E because we've got a local hospital with an A&E here, A&E department. (Interview 7, Participant 1 (B))

8.9 Discussion

Participant perceptions of pandemic influenza were heavily affected by notions of the spread of the disease. This referred to both geographical spread and numbers of individuals affected (both in terms of morbidity and mortality). Other illnesses were often used as points of reference. Spanish flu, in particular, was mentioned but also more recent health events like Ebola or Avian Flu. Participants also expressed a sense that a pandemic would be something foreign (with particular reference to 'the East' and Africa as source points). In a similar vein, a few participants expressed the view that a pandemic wouldn't be a threat either due to medical advances and resources or because flu is quite a common illness. As with the first phase older adult participants, confusion between the terms epidemic and pandemic was expressed, though most participants had the sense that a pandemic was a more concerning event.

Confusion over terminology was also observed with the zoonotic naming of some flu strains (i.e. Avian flu, Swine flu). With the fictional scenario featuring Ovine flu, some participants observed that they would expect the flu to be a more rural thing or that they would avoid sheep or lamb products to prevent becoming ill. A systematic literature review, conducted between 2011 and 2013 found that older adults demonstrated higher levels of pandemic knowledge or awareness than the general public[386] however, the findings of the current research suggest there are nonetheless knowledge gaps among this age group that need to be addressed . Given that assumptions around pandemic may influence risk perception, ensuring that the relevant characteristics of a pandemic are better understood, particularly with regards to confusion over routes of transmission and perceptions that a pandemic is a 'foreign' problem may result in in greater uptake of protective behaviours and, ultimately, improved health outcomes in a future pandemic.

[386] Tooher et al., "Community Knowledge, Behaviours and Attitudes about the 2009 H1N1 Influenza Pandemic: A Systematic Review."

As with the first phase of older adult interviews, participants in these interviews identified older adults, children, individuals with chronic illness or compromised immune systems as their perceived at-risk groups. Older adults were largely deemed to be at risk due to having less effective immune systems though, a few participants felt that older adults, by virtue of life experience, were possibly healthier than other population groups. Two participants did identify younger adults as being more at risk in a pandemic, and a few participants also identified younger population categories by virtue of an inability to isolate due to work commitments. As with previous participant groups, the prevailing concept of at-risk groups was quite static though there was some openness to alternate risk profiles. As identified in a 2011 review, previous research has found strong connection between perception of personal risk and willingness to engage in protective behaviours, in this case, vaccination during a pandemic. Several studies identified that individuals who considered their personal risk to be low were less likely to vaccinate.[387] This identifies an area that policymakers and health professionals should look to address in pandemic preparedness planning as this research strongly suggests that pre-existing assumptions around risk groups are quite set and may not be appropriate in a pandemic where the risk profile often includes atypical population groups.

When faced with public communications indicating that older adults would be less at risk, many participants were accepting of this however the combination of atypical risk profile with typically at-risk populations raised a question around risk classifications. Whilst all study participants would, in the course of seasonal influenza for example, be considered at-risk due to age, many participants did not feel that they properly fit the 'at-risk' category as they were, personally, in good health. Conversely, within the pandemic scenario, several participants, whilst accepting that older adults might not be at-risk, felt that they, personally, would be

[387] Bish et al., "Factors Associated with Uptake of Vaccination against Pandemic Influenza: A Systematic Review."

due to underlying health conditions. This research indicates that perceptions of risk are not unidimensional and that personal circumstances can affect risk perception irrespective of public health categorization.

Risk perception amongst participants varied throughout the scenario however, in the first stage of the scenario, risk perceptions among the two groups were consistent though participants in Group A were more inclined to consider themselves at risk. The lower number of participants in Group B who identified themselves as at risk reflects a higher number of participants in this group who were uncertain. This is due to several participants struggling to define, or categorize risk. Several challenges to this presented including a sense that other, or larger, swathes of the population might also be affected, a sense that they were relatively healthy and therefore not high-risk, and a need for additional information to make the determination.

Risk perceptions amongst participants in both groups dropped dramatically in the second stage of the scenario. Although the number of individuals who felt they would be at risk in Group B was lower than Group A; these numbers were also lower in the first stage of the scenario. Nonetheless, this does represent a willingness on the part of both groups to accept public health advice; even if somewhat counterintuitive. Pre-existing health complications, however, affected perceptions of risk for a few participants in Group B who indicated that, despite what they were being told, they would still consider themselves at risk due to existing illness (e.g. asthma). In both groups, some participants expressed a sense of relief that they were not listed as at-risk as this would lower their levels of concern around the pandemic. Equally, a few participants in Group A, expressed a sense that the recommendation was based less on risk and more on utility, and so older adults were being excluded.

In the third stage of the scenario, participant perceptions of risk, vis-a-vis the decision to exclude older adults, differed. Participants in Group A were often

inclined to perceive the decision to exclude over-65's from the vaccine as being for utilitarian reasons rather than medical assessment of risk. In contrast, Group B participants, whilst not completely convinced by the medical risk argument, were more accepting of a higher risk for younger adults but also often attributed this to lifestyle or occupation factors. This suggests that providing clear explanatory information to the public may make them more inclined to accept, or at least tolerate, policy decisions that could otherwise seem counterintuitive and is consistent with the literature around risk communication which stresses the importance of reducing uncertainty and explaining why as well as what needs to be done.[388]

In the first stage of the scenario, rates of participants intending to vaccinate varied greatly between the groups with half the participants in Group A intending to vaccinate, compared with three-quarters in Group B. In both groups, the perceived efficacy of the vaccine was an enabler to action however, several Group A participants also highlighted concerns around vaccine safety as affecting their motivation to vaccinate. This was offset, to some extent, by a perception that if an individual was considered at risk, they would receive the vaccine. Group B participants, in contrast, were far more likely to get the vaccine as a preventive measure with the view that, even if not effective, it would not do any harm.

Intention to vaccinate fell amongst participants in both groups though, as with the first stage, intention to vaccinate in Group B was higher than Group A. As with risk perceptions, pre-existing medical conditions affected intentions to vaccinate with some participants intending to vaccinate due to factors other than age. This highlights a potential source of confusion and an area for consideration in the development of communication materials to take into account individuals who may be at-risk for more than one reason. Participants in both groups indicated that their intention to vaccinate would be affected by potential barriers such as cost or convenience. This demonstrates how uptake of protective behaviour can be

[388] Reynolds and Seegar, "Crisis and Emergency Risk Communication as an Integrative Model."

affected not only by psychological drivers such as perception of risk and but also by external or environemental barriers such as opportunity. The leaflet, and exclusion of older adults from the priority vaccination groups, was identified by participants in both groups as affecting their intention to vaccinate.

In the third stage of the scenario, intention to vaccinate amongst both groups returned to first stage scenario levels. The intention to vaccinate in both groups was affected by perceptions around vaccine efficacy. In addition, motivational factors such as recommendation by a trusted authority (GP or Government) had a positive effect on vaccine intent. A lower perception of risk affected the intent of some Group A participants to vaccinate as they felt that, several months into the pandemic, the risk/reward calculation, may not be high enough for them to have the vaccine.

These results echo the findings of previous research which identified efficacy, in particular behavioural or response efficacy, as being strongly linked to intention to vaccinate.[389] Several participants in the current study also identified perceptions of personal risk as influencing their intention to vaccinate. This is in keeping with the results of a review which also identified personal risk as contributing to overall perceptions of threat and, subsequently, willingness to adopt protective behaviours.[390]

In the first stage of the scenario, information needs for both groups were indistinguishable. Information relating to the nature of the pandemic such as what it is, how it spreads, and what the symptoms are was sought. Participants in both groups also indicated a need for information around recommended protective behaviours to prevent becoming ill.

[389] Myers and Goodwin, "Determinents of Adults' Intention to Vaccinate against Pandemic Swine Flu."
[390] Bish and Michie, "Demographic and Attitudinal Determinants of Protective Behaviours during a Pandemic: A Review."

Despite being generally willing to accept not being in a priority group for the vaccination, participants in both groups indicated a desire for additional information regarding the decision-making process and the rationale for the decision. Participants in Group A also wanted information around why a vaccine priority list was required in the first place and when older adults would be eligible to receive the vaccine. Concerns over the safety of the vaccine were also highlighted by Group A participants. Although the enhanced leaflet did not result in a dramatic difference in vaccine intentions and perceptions of risk as compared to the standard information, participants comments indicated that open and transparent decision-making coupled with ensuring information is available regarding issues such as decision-making rationales, vaccine safety, and timelines, could assist in promoting vaccination during a pandemic by addressing potential barriers around behavioural efficacy and trust.

In the third stage of the scenario, information needs amongst both groups reflected the concerns expressed in the second stage of the scenario. Both groups were still keen to receive additional information explaining the rationale behind why older adults were not included as at-risk. Acceptability of the decision not to include over 65-year olds for priority vaccination varied between the groups with three-quarters of Group A supporting the decision and half of Group B. Participants in both groups expressed support for the risk-based rationale as presented in the leaflet, though participants in Group B were slightly more inclined to list risk assessment as a reason for why they considered decision acceptable. Several participants in Group A expressed the view that the prioritization was due to utility rather than risk factors. This assumption formed the main point of contention with the policy, though a few participants not only accepted, but supported this assumption feeling it was better that younger populations (and the economy) be allowed to thrive. Although Group B participants were less accepting of the decision, opposition to the policy tended to be based less on risk and utilitarian assumptions and more on the grounds of compassion in relation to the scenario.

The question of vaccine safety has been identified in previous research which found concerns around safety were linked to lower uptake of pandemic influenza vaccination and also identified that individuals who relied on healthcare or public health officials for information were more likely to perceive the vaccine as safe. [391] The role of trust in encouraging the adoption of protective behaviours is a repeating motif within the literature and, trust in government and media has been connected to adoption of protective health behaviours, including vaccination.[392] Participants in both Group A and B, indicated a desire for information explaining the decision making process as well as what protective measures could be taken. This suggests that older adults' communication needs in a pandemic are, broadly at least, in keeping with those of the general population as other studies have also identified clear, actionable information[393] and transparency[394] as important aspects to public communication.

Preferred information sources for older adults in the second phase were broadly similar to participants in the first phase. Traditional media sources such as radio, television and print news (national) were the preferred sources for day-to-day news. Online sources, however, were used at greater levels than first phase participants. This does demonstrate that, whilst traditional media sources should continue to form a key part of any future pandemic communication campaign, the older population is quite diverse and assumptions around this population must take this into account. These results are in keeping with other studies, examining media sources and usage, which have identified diversity in media sources used across the general population[395] but with a trend amongst older adults to traditional media

[391] Maurer, Uscher-Pines, and Harris, "Perceived Seriousness of Seasonal and A(H1N1) Influenzas, Attitudes toward Vaccination, and Vaccine Uptake among U.S. Adults: Does the Source of Information Matter?"
[392] Siegrist and Zingg, "The Role of Public Trust During Pandemics Implications for Crisis Communication."
[393] Kok et al., "Behavioural Intentions in Response to an Influenza Pandemic."
[394] Mowbray et al., "Communicating to Increase Public Uptake of Pandemic Flu Vaccination in the UK: Which Messages Work?"
[395] Marshall et al., "Awareness, Anxiety, Compliance: Community Perceptions and Response to the Threat and Reality of an Influenza Pandemic."

sources.[396] As with previous chapters, preferred health information sources were, far and away, healthcare professionals, demonstrating the important role the medical establishment can play in communicating with the public, and in particular communicating risk, during an influenza pandemic.

Handwashing and the use of hand gels were broadly viewed as useful precautionary measures. As with hand hygiene, respiratory hygiene was something participants felt would be effective to prevent the spread of illness. Most participants felt that seeking medical assistance when concerned about illness would be a productive course of action; with the GP being the preferred source. Whilst most participants indicated they would seek medical assistance if they believed themselves to be ill, a previous study, which examined not only intent but also timing, suggested that older adults may be inclined to wait before seeking medical assistance which could negatively affect the efficacy of treatment.[397]

Perceptions of self-efficacy were not broadly seen to be an impediment amongst participants adopting any of the recommended non-pharmaceutical behaviours (hand hygiene, isolation, respiratory hygiene, and seeking medical assistance). Many participants identified that hand and respiratory hygiene actions (such as using tissues to cover a cough or sneeze) were already being done. In addition, isolation was acknowledged generally as a behaviour they felt they could do; if not in full, at least in part by minimising their external contact. Although participants in this study were broadly supportive of isolation as a protective measure, an American study found that older adult participants were less supportive of social distancing measures than younger adults. Researchers hypothesized this may be due to either generational differences around work ethic or that older adults are less inclined to give up social activities due to loneliness.[398]

[396] Jehn et al., "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic."
[397] Fleming and Elliot, "The Impact of Influenza on the Health and Health Care Utilisation of Elderly People."
[398] Hilyard et al., "The Vagaries of Public Support for Government Actions in Case of a Pandemic."

Several participants expressed motivational factors in employing respiratory hygiene with the view that not to employ good practices would be discourteous to others and potential place them at risk. As well, as with the first phase older adult participants, there was a sense expressed that 'other' people were not be as meticulous in employing good respiratory hygiene. Severity of illness was identified by some participants as affecting their intention to seek medical assistance with a more severe illness being linked to increased intention to seek assistance.

The use of hand gels when away from home or not near soap and water was identified as an enabler to hand hygiene. Most participants also felt that being older and retired presented an opportunity which would make it easier to isolate, though one participant indicated employment commitments and financial would still require him to be away. This reinforces that planning challenge that not all older adults are the same and the diversity within the population must be accounted for. Logistical considerations such as convenience or ease of access, affected intent to seek medical assistance with some participants considering non-GP options such as the local chemist. The potential for environmental factors such as convenience to affect the intention to adopt protective behaviour, either positively or negatively, is in keeping with prior research.[399] Further, participants identified opportunity concerns as potentially negatively affecting their intentions to seek assistance. Participants were generally supportive of using a National Pandemic Flu Service with a marked preference for the use of a phone line over website. Concerns around access to medical assistance as well as willingness to adopt alternative methods of contacting health staff (such as the phone) suggests that a National Pandemic Flu Service could assist greatly in providing medical assistance to individuals and, in so doing, alleviate pressures on the existing health infrastructure.

This research suggests that older adult participants are broadly supportive of non-pharmaceutical protective behaviours though further research may be beneficial to

[399] Morrison and Yardley, "What Infection Control Measures Will People Carry out to Reduce Transmission of Pandemic Influenza? A Focus Group Study."

determine the extent to which these may be adopted or effectively implemented. Perceptions of response efficacy and risk were linked to intention to vaccinate. Conversely, concerns around vaccine safety reduced participants willingness to vaccinate. These results suggest that, vis-a-vis vaccination, older adults do not differ markedly from the general population.

As with the younger adults (see Chapter VII), there was general acceptance for an atypical risk profile, and associated policies, however several participants expressed a desire for additional explanatory information. This study strongly suggests that, whilst the public may accept public health guidance which appears counterintuitive, it is essential that they be provided not only with the 'what' (i.e.: what to do, what it is) but also the 'why'. Information needs amongst older adults appear in line with those of the younger population suggesting that there may not be a need to create population-specific message content. The preferred media of communication amongst older adult does differ from the younger population however, with older adults generally preferring traditional information sources such as television, radio, or newspapers over digital channels.

8.10 Chapter Summary

This chapter examined the results of the second phase interviews with older adults. This consisted of a three-part scenario examining risk perception, behavioural intent, and communication needs of older adults during a pandemic. This phase also used a novel communication-based intervention (leaflet) to test how a typically at-risk group would respond to an atypical profile of risk in a pandemic scenario, and the effect that additional explanatory information would have on their risk perceptions, intention to vaccinate, and communication needs. Chapter 9 will discuss the outcomes and implications arising from this research.

9 Chapter IX: Discussion

9.1 Chapter Overview

This chapter will review the findings of the research presented in this thesis, with respect to their implications for theory and practice. It will also explore the limitations of these studies, and provide recommendations for future research.

9.2 Aim and Structure of the Research

The aim of this thesis was to more fully understand the perceptions, behavioural intentions and communication needs of at-risk population groups during an influenza pandemic and how this, in turn, can lead to better communication with these groups to encourage the adoption of protective behaviours and improved health outcomes. This research focused on a London perspective and examined two potentially at-risk population groups: older adults (>70 years of age) and younger adults (operationalized as university students). Interviews were also conducted with UK practitioners responsible for pandemic planning at a national, local, and institutional level to gain a better understanding of existing practice and challenges around pandemic preparedness. These interviews were supplemented with a review of international, national, and local pandemic planning guidance.

A series of interviews (individual and group) were conducted with members of the target populations to determine risk perceptions, behavioural intentions and information needs in response to a pandemic scenario. The results of this first phase of research led to the development and testing of a communication intervention with older adult participants that was designed to examine their willingness to follow public health advice that challenges typical perceptions of risk during a pandemic. Specifically, the pandemic scenario was moved forward several months in order to test participant responses to risk-based pandemic guidance around vaccination priority groups, in this case de-prioritizing older adults. Participants were provided with an information leaflet on vaccination and priority groups, with one half receiving a standard leaflet whilst the other half received a

leaflet with additional explanatory information regarding the selection of at-risk population groups.

The research employed a model based on Protection Motivation Theory and COM-B to identify areas where communication with at-risk or vulnerable populations could improve health outcomes during a pandemic. PMT was well suited to this research as it considers the effect that risk perception and coping appraisals have on behavioural intentions. However, while PMT references possible barriers to action such as cost, these are not clearly codified within the theory. Consequently, the research also used the COM-B model as a supplementary framework to incorporate additional opportunity barriers. This approach allowed for a targeted focus on the impact of risk perception, and coping appraisals on behavioural intentions whilst also accounting for potential environmental or societal barriers/incentives to action.

9.3 Summary Research Findings

9.3.1 Identifying Those Who Are 'At Risk' or 'Vulnerable' to Pandemic Influenza

One area highlighted by the emergency planners that were interviewed, is the need to find ways to reach lonely or socially isolated older adults. This was also referenced by older adult interviewees who felt that a pandemic could create particular challenges for individuals who were living alone or who were housebound. Although it is likely that many of these individuals would be already known to the authorities due to receipt of benefits or social care, practitioners highlighted a challenge in identifying individuals who would be vulnerable but whose needs are not yet great enough to be in receipt of aid. This challenge has been identified in the London Borough of Bexley emergency planning documents which highlighted the lack of, and difficulty in assembling, a single list of hard-to-reach populations due to the number of agencies involved and privacy concerns.[400] An additional difficulty for older adults that could increase their vulnerability is an

[400] Emergency Planning and Business Continuity Team, "London Borough of Bexley: Major Emergency Plan."

increased societal reliance on technology, not only as a source of information but also for service delivery; such as online grocery shopping. Although convenient and effective, this move toward technological dependence risks disadvantaging older adults who may lack physical access, knowledge, or capacity to use these services.

Participants from across both older and younger adults population groups expressed similar assumptions and perceptions of at-risk groups in a pandemic; largely mirroring seasonal influenza vaccination recommendations. Individuals with weaker or compromised immune systems such as older adults, children, and people with chronic health conditions were the most cited group for risk in a pandemic. This was followed by individuals affected by life factors such as pregnancy, living in a high-density area, poor diet or exercise, and working age adults due to their inability to isolate. This latter group also encompassed health care workers due their ongoing exposure to illness. To a lesser extent, socio-economic conditions, mainly poverty, were also listed as risk factors. A few participants also identified either 'everyone' as being at-risk or, more selectively, younger adults due to higher susceptibility. . This tendency amongst participants to assume that those most at-risk in a pandemic would be the traditional groups thought of as at-risk (i.e. those groups prioritized for seasonal influenza vaccination) was also identified in a study on university student awareness of pandemic where younger adults also identified traditional risk groups as being most susceptible to pandemic influenza.[401] Given that experience has been shown to affect risk, it is interesting that most older adults, despite having had experience of influenza pandemics did not make more accurate assessments of at-risk groups than younger adult participants.

The diversity of the older adult population can affect perceptions of personal risk. This can create a communication barrier which, in turn, may negatively influence the adoption of protective behaviours. Ranging in age from 65 to 112 years[402], this population easily encompasses at least two generations. Though many older adults

[401] Seale et al., "Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza."
[402] Bell, "Oldest Person in the UK: How Has Life Changed?"

are retired, some are still employed. Equally, there is a diverse range of characteristics within this population covering aspects of health, mobility, intellectual capacity, technological familiarity, to name but a few. The diversity within the older adult population was also highlighted in a review of older adults in extreme events with age not necessarily equating to vulnerability given the varied health, capability, and experience of the older adult population.[403] Consequently, planning must not only include the vulnerable older adult population, it must also consider how to communicate effectively with the broader older adult population. This challenge was referenced by participants in the second older adult group. Participants in this group expressed that, although of an age where they are considered older, they do not feel the label necessarily applies to them and, as a result, are less likely to follow public health guidance aimed at older adults. The findings of this study suggest that the diversity in the older adult population will affect how they will respond to communication directed to them.

Similarly, younger adults' acceptance of the extent to which they would be personally at risk was affected by their perceptions of themselves. Participants who expressed that they would not feel at risk, tended to cite their age, health, or an associated sense of invulnerability, as protective factors against their susceptibility to influenza. These results echo previous research in this area which found that younger adults may be less likely to consider themselves at risk.[404] This is an area that should be considered vis-à-vis communication as amongst younger adult participants, acceptance of being at-risk was linked to willingness and intent to adopt protective behaviours.

Whilst 'risk' and 'vulnerability' in the context of pandemic lack clear and consistent definition across planning guidance documents, emergency planners indicated they do tend to consider these as separate entities. In contrast, there was no consensus

[403] McClelland et al., "Psychological and Physical Impacts of Extreme Events on Older Adults: Implications for Communications."
[404] Seale et al., "Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza"; Agarwal, "A/H1N1 Vaccine Intentions in College Students: An Application of the Theory of Planned Behaviour."

around the definition of the terms 'risk' and 'vulnerability' amongst younger or older adult participants. Whether the terms were similar or disparate and, if so to what extent, varied greatly amongst participants. Where, however, the terms were distinguished, vulnerability was generally considered to be more personal, associated with a sense of helplessness, and linked to the severity of health impact once ill (as opposed to the likelihood of becoming ill). In addition, some older adult participants opposed the notion that older adults (as a group) are necessarily vulnerable as there are a number of factors that affect vulnerability, and age isn't necessarily the determining factor.

Perceptions of at-risk populations amongst both age groups were consistent with the populations identified for seasonal influenza and highlight an area where communication may be needed in the event of an extreme event with atypical risk; such as a pandemic. Misperceptions around risk may negatively impact public adherence to medical guidance and, in particular, result in a lower uptake of protective behaviour amongst younger adults, who would not normally consider themselves at risk.

9.3.2 Knowledge of Pandemic Influenza

The initial points of reference for most participants in considering a pandemic were consistent across all three research phases. The 1918 Spanish flu was frequently referenced along with Ebola and Avian Flu. A few younger adults also referred to examples from popular culture such as zombie films. When asked about personal experience of pandemic influenza, a clear generational divide occurred. Where experience existed amongst older adults, it was either of 'Asian flu' (which was used to refer to both the 1957 or 1968 pandemics) or of having lost older family members in the 1918 pandemic. Younger adult participants, on the other hand, solely referred to their personal experience of the 2009 H1N1 (Swine flu) pandemic. These experiences were described not only in terms of becoming ill but also the disruption of normal life, for example containment measures such as checks at airports or school closures. The use by younger adults of H1N1 as a point of reference may highlight a communication challenge in a future pandemic given the

lower-than-anticipated severity of the 2009 pandemic and the role of past experience in shaping perceptions of threat. This challenge has been identified in other research including a Canadian study on H1N1 found that perceptions of threat were affected by the national experience of SARS which had not been as severe as predicted.[405]

Participants in all groups identified wide geographic spread as a defining characteristic of a future pandemic, although there was some generational disparity. Whilst younger adult descriptions of a pandemic tended to focus on it being widespread from a geographical perspective, some older adults in both phases considered the numbers of individuals affected to be as important. The identification of geographic spread as a pandemic characteristic is interesting given how proximity was seen to affect perceptions of risk in the first phase of the research where participants in both age groups indicated they would be more concerned, and feel more at-risk, if pandemic cases were identified within an area they considered geographically close (whether that was London, the UK, or Europe).

All participants were aware that flu is more severe than a cold. However, they were less clear on the distinction between seasonal and pandemic influenza. Furthermore, amongst younger adult participants, those who focused more on 'pandemic' were more likely to consider an influenza pandemic as something to be concerned about then those who focused on 'influenza'. Differentiation between pandemic flu and seasonal flu in terms of strain rather than spread, particularly pre-scenario, was limited. Only one participant in the first phase older adult groups identified that a pandemic would involve an alternative strain of influenza, although several younger adult participants were aware of this fact. The confusion over seasonal and pandemic flu may have affected participant perceptions of at-risk groups with participants assuming there would be no distinction between the two.

[405] Taha, Matheson, and Anisman, "The 2009 H1N1 Influenza Pandemic: The Role of Threat, Coping, and Media Trust on Vaccination Intentions in Canada."

This supports the need to clearly communicate with the public and provide explanatory information to correct misperceptions as these may affect perceptions of risk and willingness to adopt protective measures.

The naming conventions around pandemic influenza were seen to cause some confusion. Participants in all three studies expressed uncertainty over the distinction between an epidemic and a pandemic. Furthermore, the tendency to name pandemic flu strains after their zoonotic origin also created confusion around risk, transmissibility and, consequently, protective behaviours. For example, some participants in both age groups indicated they would consider avoiding lamb or wool as a means to prevent illness when presented with an 'ovine flu' scenario. These results support previous research conducted with university students, in which many study participants expressed confusion over the role that pigs played in infection transmission relating to the 2009 H1N1 (Swine) flu.[406] Taken together, this suggests that reducing public misperceptions around origins and spread of pandemic influenza may not only encourage the adoption of recommended protective behaviours but may also discourage the uptake of behaviours which are either not helpful or potentially harmful. In Canada, for example, during the 2009 pandemic, a deliberate effort was made to refer to the virus as H1N1 and not Swine flu. This was done to reduce public confusion around transmission routes[407] and also to avoid the risk of unwarranted economic effects to the agricultural sector, and future costs, both in resources and time, of correcting established misperceptions.[408]

Although the study did not identify any consistent and severe misunderstandings in public knowledge of pandemics, it did identify several areas where improved communication could provide clarity to underlying assumptions or confusions around pandemic influenza. Previous research has identified greater knowledge

[406] Seale et al., "Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza."
[407] Fitzpatrick, "15 New Cases of Swine Flu Confirmed in Canada."
[408] Author's experience as senior political advisor to the Canadian Minister of Health during this time.

around pandemic, particularly around the nature and spread, as being positively linked to uptake of protective behaviours.[409] This study identified gaps in knowledge and understanding amongst participants where communication could be beneficial in improving public knowledge and awareness including defining a pandemic versus an epidemic; providing greater explanation of the naming conventions; and outlining the differences between pandemic and seasonal influenza. Correcting baseline perceptions of pandemic influenza would not only improve public understanding of pandemic influenza, it could also affect public perceptions of risk which, in turn, may increase the uptake of protective behaviours during a pandemic.

9.3.3 Risk Perception

Proximity played an important role in the first stage of the scenario when discussing risk perception, though with variations amongst the population groups. Geographical distance of the outbreak tended to reduce perceived risk across both groups. The role of proximity in affecting risk perceptions was also observed by Tooher.[410] Some younger adult participants, however, suggested that, although Greece was far away, it was not necessarily far enough away for them to discount the risk. The sense that diseases can easily cross borders was largely ignored amongst the older adults, with participants citing the protective benefit of the English Channel and, in one case, comparing the outbreak to an earthquake. The number of people affected also influenced perceptions of risk, particularly amongst older adult participants. Younger adults were less likely to highlight numbers affected but did reference the population density of London as being something they would be concerned about should the Ovine flu reach UK shores. The role of proximity and severity in affecting risk perception and, consequently, uptake of protective behaviours has been identified in previous research which found disparities between survey participants in the UK and in Mexico during H1N1. UK participants indicated lower uptake of protective behaviours which researchers

[409] Bish and Michie, "Demographic and Attitudinal Determinants of Protective Behaviours during a Pandemic: A Review."
[410] Tooher et al., "Community Knowledge, Behaviours and Attitudes about the 2009 H1N1 Influenza Pandemic: A Systematic Review."

linked to timing as, when the surveys were conducted, the pandemic was well underway in Mexico whilst the UK had yet to experience its first H1N1 related death.[411]

As participants moved to the second stage of the scenario, risk perception factors remained thematically consistent for both younger and older adults. Geographic distribution of cases affected participants' perceptions of risk, with greater proximity linked to higher risk perception. Differences, however, emerged between the age groups with respect to where the location of cases needed to be to prompt higher levels of concern. Older adults often expressed a view that, whilst concerned about UK cases, they would be more affected by morbidity and mortality rates in their local area whereas younger adults were more inclined to consider the fact of UK cases writ large as a cause for concern. As in the first stage of the scenario, this represents a generational shift in perceptions of locality with younger adults being more inclined to view 'their' world in broader geographic terms than older adults. As at the first stage, population statistics were an influencing factor for risk perception in both groups. The increased scope of the pandemic and presence of fatalities in the UK prompted older adults to say they intended to adopt protective behaviours. Students continued to view living in London as a risk factor and the occurrence of fatalities, particularly that of an otherwise healthy young woman, increased their perception of risk though this was tempered somewhat by the comparatively low number of deaths at this point.

With the first scenario inject in the second phase of the study, proximity was no longer discussed as a risk factor given in this scenario the pandemic was well underway and established in the UK. Instead, risk perceptions were based more on assessment of personal characteristics such as health or lifestyle. Risk perceptions were broadly consistent though some participants struggled to define their personal risk in relation to a pandemic. This was due to a sense that their population group would not be at great risk and/or that they considered

[411] Tooher et al.

themselves to be healthy and thus would be less at-risk. This uncertainty led several participants to indicate they would need additional information to make a proper determination of whether they were at-risk.

After receiving the second inject in the second phase of the study, risk perceptions dropped significantly amongst participants, regardless of which leaflet they received. Personal characteristics continued to influence risk perception with some participants basing their assessment on factors other than their age, such as pre-existing health conditions. Several participants across both groups were fully prepared to accept at face value the guidance that they were not at risk and expressed relief or lower levels of concern around the pandemic. There were, however, a few participants who received standard information (Group A) for whom the information provided did nothing to alleviate or alter their perceptions as they felt the decision not to prioritise older adults was based on utility rather than risk – i.e. that younger adults were prioritised due to societal or economic reasons rather than because they were are greater risk. When presented with the third scenario inject, the trend toward assumptions of utility over risk continued to be expressed. Group A participants often assumed the decision to exclude older adults from the priority vaccine list was based in utilitarian motives. Group B participants were more likely to cite risk factors in prioritizing younger adults, though often more a case of risk from lifestyle or occupational factors rather than medical risk.

This research suggests that factors influencing risk perception are likely to change over the course of a pandemic. In the initial days, before it has taken hold, extrinsic factors like geography and population statistics or probabilities may be more influential. Once a pandemic is well underway, intrinsic characteristics, coupled with trust in authorities, and clarity of information, may be more pertinent in determining perceptions of risk, particularly amongst older adults. Additionally, past experience may affect risk perception, and, in turn, behaviour response. The evolution of risk throughout a pandemic has been identified in prior research conducted during the 2009 H1N1 pandemic which found that, as the pandemic

progressed, an increasing number of study participants expressed the view that the threat was being exaggerated and that it was simply something one 'had to live with'.[412] Taken together, this suggests that public health communication during a pandemic must be able to respond to a fluid situation to ensure that public information needs are responsibly and effectively met in order to counter misperceptions and encourage uptake of protective behaviours.

9.3.4 Factors Influencing Behavioural Intention

Participants' intention to adopt, the five recommended behaviours examined (hand hygiene, respiratory hygiene, seeking medical assistance, voluntary isolation, and vaccination) were assessed through a framework based on Protection Motivation Theory (PMT) and COM-B. This clarified how coping appraisals, capability, opportunity and motivation influenced behavioural intentions in response to a pandemic influenza scenario.

The perceived efficacy of the five recommended behaviours was high for both younger and older adults. Despite self-efficacy barriers to isolation, participants in both groups were largely in agreement that it would be a useful behaviour to prevent the spread of illness. Hand and respiratory hygiene practices were also widely acknowledged as efficacious in reducing infection spread. Vaccination was considered to be a useful way to avoid becoming ill. However, support for this behaviour was tempered by a few participants in both the older and younger adult groups who mentioned concerns over vaccine safety. Furthermore, younger adult participants expressed doubt over the effectiveness of this particular vaccine given the comparatively short timeline for development.

Capability factors did not feature heavily in reported behavioural intentions and associated barriers or enablers to action. The two behaviours where physical capability was raised were respiratory hygiene and vaccination. The challenge of anticipating a cough or sneeze to ensure a tissue was at the ready was referenced

[412] Bults et al., "Perceived Risk, Anxiety, and Behavioural Responses of the General Public during the Early Phase of the Influenza A (H1N1) Pandemic in the Netherlands: Results of Three Consecutive Online Surveys."

by both younger and older adults. This challenge was also identified in previous research on responses to pandemics.[413] Additionally, some younger adult participants indicated that carrying around tissues would be a potential challenge for them. Capability barriers to vaccination were not mentioned by younger adult participants however, a limited number of older adult participants referenced previous adverse reactions to vaccination as a potential barrier to future vaccination in the event of a pandemic.

Opportunity factors influenced the intended uptake of all the recommended behaviours under examination. Although lack of access to soap and water when away from home was identified as a barrier to handwashing, participants were also quick to mention that the use of hand gels to clean hands would provide a suitable alternative option. Cost and convenience affected intention to vaccinate with participants indicating that they would be less likely to receive a vaccine if they had to pay for it and that the price of the vaccine would also be an influencing factor. Several older adult participants highlighted that the location of vaccination services would also be important, with the ability to receive vaccinations at the local chemist encouraging vaccine uptake.

Wait times, whether at the GP, A&E, or with a flu service were felt by both younger and older participants to be a deterrent for seeking medical assistance. In addition, older adults expressed concern that an overreliance on technological platforms to disseminate medical information would create a barrier to access for many older people. Voluntary isolation was demonstrably a stronger opportunity barrier for younger adult participants than for the older adults that were interviewed. The older adults expressed the view that it would be easier for them to isolate as they were older and retired. In contrast, the younger adults cited ongoing commitments such as university and work as barriers to isolation. For many of the younger adults, even if university planners were to make adjustments such as facilitating online learning or cancelling classes, work commitments coupled with financial

[413] Low, "Pandemic Planning: Non-Pharmaceutical Interventions."

requirements would still necessitate regular external contact. For other younger adults, social commitments were considered paramount. Finally, although lack of opportunity to practice respiratory hygiene was only mentioned by one older adult participant, a lack of bins in public areas, was raised by several participants as a barrier to effectively disposing of used tissues. Public health messaging recommends individuals 'Catch it, bin it, kill it'. The challenge in enacting the first part of the advice falls to capability but the second requires opportunity.

Overall, willingness to undertake the recommended behaviours was largely influenced by two considerations: risk perception and societal expectations. Both older and younger adults identified their perception of personal risk as affecting their willingness to isolate, particularly in regard to social activities. A lower perception of risk was associated with a disinclination to curtail voluntary social activities. Risk perception was also apparent around vaccination with higher perception of risk, especially when coupled with pre-existing medical conditions, linked to increased intention to vaccinate. Social expectation or perceptions around courtesy affected willingness to adopt hand and respiratory hygiene measures for both younger and older adults. Although many participants indicated they were prepared to adopt these measures, they also tended to indicate these were activities they were already undertaking. However, participants in both age groups also suggested that these values are not necessarily universally shared. Accepted modes of respiratory hygiene were also influenced by social norms. For example, the use of the crook of one's elbow to cover a cough or a sneeze was emphatically not supported by older adults, although younger participants found this a less objectionable suggestion. The common rationale for opposing this measure was the perception that this would be unhygienic and concern over social opprobrium.

Additional motivational factors were referenced around vaccination, but these differed between age group. Some older adults suggested that their existing habit of vaccination for seasonal flu would contribute to their likelihood of receiving a pandemic vaccination. Others commented that if a recommendation came from a

trusted authority, such as their GP, they would be more inclined to vaccinate. For younger adults, the perceived responsibility of protecting others by contributing to herd immunity was an incentive to vaccinate.

Perceived self-efficacy was high for both age groups for all recommended behaviours except voluntary isolation. Hand and respiratory hygiene were deemed to be non-intrusive and relatively low-cost measures that participants could easily implement. In fact, most indicated that not only did they feel they could adopt these behaviours in a pandemic but they were already employing them on a day-to-day basis. Participants were similarly broadly supportive of seeking medical assistance when ill, although ability to contact a medical authority (whether GP or flu service) was often called into question. The one area where participants did express some level of concern about their ability was around voluntary isolation. Older adults were more likely to feel they would be willing and able to reduce social contact. However, very few felt they would be able to isolate themselves completely. Young adult participants, in contrast, frequently referenced 'unavoidable' obligations such as university or work as preventing them being willing or able to consider socially isolating themselves during a pandemic.

Through the inclusion of a suite of protective behaviours, rather than focusing on one or two, this research was able to compare not only behavioural intentions but also to examine the enablers or barriers to action amongst study participants in two potentially at-risk population groups. Overall, participants in both groups expressed support for and intention to adopt the recommended protective behaviours. Response efficacy was high for all behaviours and, indeed, participants often spontaneously identified these as helpful actions to take to reduce the spread of illness. The one area where concerns arose was around vaccine safety and efficacy. These concerns were occasionally expressed either as an overall mistrust of vaccines but, more often where the result either of past experience with adverse reactions or, more commonly prompted by the timeline for vaccine delivery, the rapidity of which was seen to raise questions around whether testing had been fully done to ensure both safety and efficacy. Concerns around safety and, to a lesser

extent, efficacy were also identified by a Greek study conducted during the H1N1 pandemic (August 2009) which found low intent to vaccinate amongst the population; predominately due to concerns over safety but also due to low perceptions of vaccine efficacy and severity of the pandemic.[414]

With the exception of voluntary isolation, participants were strongly of the view that these would be behaviours they would be able to adopt, and in many cases, were behaviours they were already employing. Isolation was identified by both older and younger adults in this study as potentially problematic though; younger adults were far more likely to express an inability to enact this behaviour unless required to (via university shutdown or government quarantine). This was due to prior commitments, often a disinclination to miss university, as well as financial commitments which would necessitate going to work. The question of financial consideration disincentivising isolation has also been identified in research in the general population which found a lower number of participants willing to stay home if this would result in a loss of income.[415] This suggests not only that institutions such as universities should examine alternative service delivery mechanisms but also that pandemic planning should consider the challenge of personal financial implications of a pandemic, particularly for individuals in insecure or non-standard employment.

Whilst the recommended behaviours were largely viewed to be efficacious amongst both population groups, potential opportunity barriers (or if addressed, enablers) to action commonly identified centred around cost and convenience. In both age groups, though more so for the younger adults, some participants indicated that if the vaccine was associated with personal financial cost this would act as a barrier and would either reduce or altogether eliminate their intention to vaccinate. Convenience was a repeated motif across the recommended behaviours with access to handwashing facilities or remembering to carry hand gel, having tissues to

[414] Sypsa
[415] Kok

hand, low-or-no wait times for medical assistance, and easily accessible locations for vaccination clinics identified as particular considerations. The influence of environmental factors (such as effort, time, and access to facilities) was also identified in previous research.[416] This demonstrates an area where accessibility can either promote or impede uptake of protective behaviours. Ensuring rapid access to medical treatment, including antivirals, is addressed in the UK Pandemic Preparedness Strategy[417] however, improving access barriers to other protective behaviours could be further addressed either at a government or institutional level (i.e. the provision of hand gel stations in public areas).

9.3.5 Communication

Information needs in response to the evolving pandemic scenario were generally consistent across age groups and were also consistent with planning assumptions identified in interviews with practitioners. Practitioners working in university settings, for example, felt that younger adults would require clear information detailing general medical facts including symptoms and suggestions around preventive behaviours. This assumption was supported by the responses of younger adult participants who indicated that during a pandemic they would want general medical information (ie: what it is, symptoms, how it spreads, number of cases), with a particular focus on what steps they could take to protect themselves. Older adult participants echoed the desire for clear, informative, and constructive information relating to the pandemic. This corresponds with planning assumptions around the type of information the authorities will need to provide to the general public. rthermore, a study of older adults affected by flooding advised the use of 'ordinary' language[418] and, research has shown that 50% of residents in Veterans Affairs nursing homes affected by Hurricane Katrina and Rita suffered from some type of cognitive difficulty.[419] This further reinforces the need to use clear

[416] Morrison and Yardley, "What Infection Control Measures Will People Carry out to Reduce Transmission of Pandemic Influenza? A Focus Group Study."
[417] UK Department of Health Pandemic Influenza Preparedness Team, "UK Influenza Pandemic Preparedness Strategy."
[418] Etingen et al., "Health Information during the H1N1 Influenza Pandemic: Did the Amount Received Influence Infection Prevention Behaviors?"
[419] Huerta and Horton, "Coping Behaviour of Elderly Flood Victims."

communication with the public and to tailor communication strategies to ensure they are audience-appropriate. Providing specific medical information, however, can create a communication challenge for emergency planners at the outset of a pandemic as the unpredictable nature of a novel strain may require policy makers to communicate uncertainty to a public which expects action. Although this may present a challenge, it also presents an opportunity to keep the public informed about steps they can take to protect themselves and to build trust between the public and health authorities.[420]

When confronted with an atypical profile of risk, or one that challenged conventional expectations participants across both age groups expressed a desire for additional explanatory information. This was more strongly observed with the younger adult and second phase older adult groups as the risk, or effect of it, was more directly linked to them. In the case of younger adults, when they were presented with the death of a member of their age cohort and in the case of older adults, when they were told that they were excluded from the vaccine priority list. Nonetheless, both younger adults and older adults were prepared to trust the assertion that their risk profile was altered. However, participants in both age groups expressed a need for additional information to clarify the rationale behind this. This is in line with previous research on communicating with the public during a pandemic, which suggested that evidence-based information be provided in a transparent manner.[421] This desire for additional explanatory information also included older adult participants who had received the enhanced leaflet that contained additional information. This is, in part, attributable to the information provided not being sufficient to allay concerns amongst all participants but is also due to individuals having read but not retained the information. This underscores a communication challenge that must be accounted for in planning as the assumption must be made that despite making information available, it will either a) not be

[420] Bults et al., "Perceived Risk, Anxiety, and Behavioural Responses of the General Public during the Early Phase of the Influenza A (H1N1) Pandemic in the Netherlands: Results of Three Consecutive Online Surveys."
[421] Mowbray et al., "Communicating to Increase Public Uptake of Pandemic Flu Vaccination in the UK: Which Messages Work?"

deemed sufficient or b) not register with a proportion of the population. Previous research on public engagement with protective behaviours during a pandemic has also found that, even when information is provided to the public, it should not be assumed that this will be either sufficiently clear or achieve message saturation.[422] Public health messaging will need to be reiterated and communication strategies will have to be prepared to adapt frequently and rapidly.

A further element to communication with at-risk populations, and indeed the public at large, is the challenge around ensuring appropriate media are used to ensure message saturation. Differences between the responses given by the older and younger adults that were interviewed were most apparent with respect to preferred communication methods. The older adults expressed a marked preference for traditional media sources (radio, television, and newspapers) whilst the younger adults preferred new media sources, such as the internet. These distinctions were not absolute and there was some within-group variance. For example, some of the older adults were computer literate and some of the younger adults cited television as a preferred information source. Despite this, there is a clear distinction between older and younger adult media consumption, reinforced by a 2009 study examining public awareness and behaviour during the H1N1 pandemic. This study also identified an age disparity between the use of traditional and digital media.[423] However, the distinction was clear. Ideally communication should therefore be distributed through all media but, if that is not logistically possible it would then become necessary to determine which media platforms would reach the public at large and, within each platform, which subsections to use. This was identified by university planners as a challenge to targeting communications as they must first ascertain which social media forums students are involved in and, consider whether or not students are engaged with or accessible to the university on particular platforms.

[422] Kiviniemi et al., "Perceptions of and Willingness to Engage in Public Health Precautions to Prevent 2009 H1N1 Influenza Transmission."
[423] Jehn et al., "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic."

Participants across both age groups expressed high levels of trust in the authorities. Medical authorities, in particular GPs, were considered to be a reliable source of information in the event of a pandemic. This trust, coupled with the high rates of intention to seek medical assistance, demonstrates the importance of the medical establishment in helping to communicate during a pandemic. Government was also considered to be a trusted source of information in a pandemic, although some older adult participants distinguished between 'government' which was trustworthy and 'politicians' who were less so. This echoed assumptions made by London local authority emergency planners who felt that, in the event of a pandemic, the authorities would be considered a trusted source due the public health nature of the event. While most university administrators felt that 'the university' would be considered a trusted source of information, one practitioner expressed concern that students may be less accepting of official communication due to an existing anti-establishment bias. Younger adult participants did, however, indicate that they considered the university a trusted source of information and did not tend toward anti-establishment views. Given that trust in authorities has been linked to intention to adopt protective behaviours during a pandemic, notably vaccination[424], the relatively high levels of trust in authorities expressed by both population groups suggests that public health guidance is likely to be positively received.

From a practitioner standpoint, Public Health England (PHE) was considered the lead agency with regard to management of an influenza pandemic and both emergency planners and university administrators indicated that they would expect to receive communication materials and advice from them. This support for and acknowledgement of PHE as the primary lead would also be beneficial in ensuring that different levels of government, or authorities are using consistent messaging in their communications. Consistency in messaging was highlighted by university administrators as an important consideration in communicating with students as

[424] Taha, Matheson, and Anisman, "The 2009 H1N1 Influenza Pandemic: The Role of Threat, Coping, and Media Trust on Vaccination Intentions in Canada."

well as the need to collaborate with other area universities. It is unrealistic to expect that students from one university would not interact with colleagues from another establishment, particularly in a city like London that has many universities. Universities, therefore, should aim to ensure consistent messages are conveyed to their student populations.

9.4 Implications of the Research

The findings of this research suggest that perceptions of response and self-efficacy around recommended protective behaviours are consistently high amongst older and younger adults. The five behaviours examined were routinely considered useful in either preventing personal illness or preventing the spread of illness during an influenza pandemic. Social isolation however, was consistently highlighted as a more challenging behaviour for both age groups, and, in particular, younger adults. This was also a finding from previous research[425] and suggests that, of the recommended protective behaviours, social isolation may present a specific policy and communication challenge during a pandemic. Overall, however, these findings suggest that the public would not face significant challenges around perceptions of efficacy vis-à-vis implementation of protective behaviours during a pandemic.

Of the remaining barriers or enablers to action identified in this research, opportunity represents a key area that needs to be addressed. These largely fall under the mantle of public convenience and could be addressed through policy guidance. Voluntary isolation, however, remains a challenging prospect, particularly for a younger population with well established external commitments. The findings of this research would suggest that isolation, whilst effective in preventing the spread of illness would be very difficult to enact outside of a formal imposition of quarantine. Encouraging institutions such as universities, or employers, to consider alternative operations wherever possible, during a

[425] Baum, Jacobsen, and Goold, "'Listen to the People': Public Deliberation about Social Distancing Measures in a Pandemic"; Kok et al., "Behavioural Intentions in Response to an Influenza Pandemic."

pandemic could contribute to limiting public exposure. This behaviour does, however, demonstrate how generational differences can result in important nuances even within a particular barrier. Both older and younger adults indicated that it would be impossible to fully isolate due to existing requirements. For the younger population this can be extrapolated as university or work commitments. Given previous comments around limitations on older adult technological facility, older adults may still be more reliant of the use of bricks and mortar services (such as needing to go to the store rather than order groceries online). Both populations have opportunity limits on their ability to isolate but this manifests differently in each population.

Motivational barriers or enablers were a consistent feature of the behaviours studied and emerged amongst all three participant groups. Motivation to adopt protective behaviours is greatly affected by risk perception and social expectations. This underscores the importance of risk perception in promoting behaviour change. Social norms can have a positive influence on behaviour, such as the expectation that one will cover a cough or a sneeze but can also negatively affect behavioural intentions, such as a lack of willingness to 'sneeze into your sleeve' out of concerns this would be "looked down on" or not be socially acceptable.

Barriers to capability were limited and restricted to the physical challenge of pre-empting a cough or sneeze with a tissue at hand and the experience of adverse physical reactions to a past vaccination. Although capability only affected two target behaviours, the barriers were observed across population groups. The challenges related to these barriers are individual, and rest with the individual, nevertheless, that the physical effects, decreased control, or ability to counter them, represents a rather significant barrier that requires further study to identify communication needs. The findings of this research would suggest that, although there are some areas which could be improved, public acceptance of protective behaviours during a pandemic, ability to adopt these behaviours, and intent to do so is high across all behaviours examined and within both demographic populations studied.

Protection Motivation Theory (PMT) was selected for this study because of its focus on risk perception, behaviour efficacy, and self-efficacy. Although PMT does allow for the inclusion of additional barriers to action, these are not well codified within the theory. The COM-B model, in contrast, attempts to provide a holistic approach to behaviour change. This high-level perspective allows for the inclusion of virtually all potential variables with a view to aiding practitioners in the development of interventions. This high-level approach, however, whilst inclusive, does not always lend itself to a clear classification of specific variables as these can straddle the line between general category definitions, which increases the subjectivity of the analysis. With this research, this was particularly noticeable with risk perception and perceptions of response efficacy.

The use, therefore, of a hybrid model, specifically with the inclusion of COM-B factors, allowed for the consideration of elements other than perception of risk and efficacy. In particular, this provided the opportunity to clearly incorporate external factors that affect an individual's ability to translate behavioural intentions into behaviour. This is crucial as, understanding the practical or environmental factors which may affect behaviour can greatly assist in adjusting policies and planning to better account for these variables. Additionally, identifying immovable barriers to action can influence communication strategies to target resources and deliver practical and actionable messages in order to improve health outcomes during a pandemic. This can be illustrated with the example of respiratory hygiene and the choice between using tissues (Catch It, Bin It, Kill It) and the crook of one's arm ('Sneeze into your sleeve'). The former policy results in the potential for opportunity barriers to action (due to availability of tissues) whilst the second creates a motivational barrier (social norms). With this in mind, pandemic planners can then assess which barriers are most insurmountable and, from this base of knowledge, develop policy, and target communications to address public concerns and promote preventive health behaviours.

The use of a modified theoretical approach does, however, highlight the challenge of finding the correct balance between theories, particularly considering the proliferation of theories of behaviour change. Given the importance of ensuring the theoretical and analytical framework used is the most appropriate to any given study, the use of a modified PMT structure allowed for a 'best of both worlds' approach. Similar to previous studies which used the Theory of Planned Behaviour but incorporated additional elements, the use of a modified (or enhanced) PMT, in this research allowed for greater explanatory power through the consideration of additional factors whilst still maintaining a focused approach.

Of the two population groups studied, information needs vis-a-vis content in the event of a pandemic did not vary noticeably between the population groups and were also consistent with practitioner assumptions, captured in the interviews. Additionally, the needs of younger and older adults are in line with planning assumptions around communication with the public in general. In the event of a pandemic, study participants expressed a desire for clear, concise, practical information. This would suggest that existing communication messaging is appropriate for these population groups.

Differences in communication needs arose, however, on the subject of media rather than message. Younger adults indicated a preference for new media methods whilst older adults leaned more heavily toward traditional media. This suggests that any successful communication campaign will need to rely on several approaches to reach the whole population. This generational divide on technological engagement and consumption was also apparent in National Pandemic Flu service preferences. Whilst not as stark a divide as public health communication, older adults expressed a marked preference for a phone line and younger adults, a website. Although the use of online platforms provides a rapid, cost-effective and easily amendable means of communication, the disparity between preferred communication sources amongst different population sub-sets demonstrates the need for a multi-forum, multi-platform approach in communicating and interacting with the public during a pandemic.

In addition to ensuring the necessary information is conveyed through the right medium, communication should also consider who is delivering the message as research has shown that trust can have an impact on behaviour.[426] Across demographic lines, participants expressed a relatively high level of trust in the authorities though certain sectors were seen as more reliable than others. Medical personnel, particularly doctors, were seen as reliable and, were often cited as a first port of call for information. Although 'government' was generally considered trustworthy, participants often expressed that 'government' is not monolithic and their trust is not absolute. Within the government rubric, therefore, public health authorities were seen as far more trustworthy than politicians.

The results of this research suggest several challenges, and opportunities for policy makers in preparing for, and managing, a future pandemic. Although further study may be required to determine the extent to which these results are applicable to other population groups and whether they are applicable outside the Greater London area, this research has identified seven key recommendations (see Figure 9.1).

Figure 9-1 Recommendations for Practitioners

Recommendations for Practitioners

1. **Ensure communication with the public, especially public health guidance, is clear, consistent, actionable.**

   Study participants overwhelmingly expressed a desire for fact-based, explanatory guidance which would provide advise on the state of the pandemic and provide guidance vis-à-vis protective measures. Consistency in messaging will reduce the potential for confusion and avoiding mixed messages will support trust in the authorities. Over the course of the pandemic, public health communication must be able to respond to a fluid situation and ensure that public information needs are responsibly and

[426] Siegrist and Zingg, "The Role of Public Trust During Pandemics Implications for Crisis Communication."

effectively met in order to counter misperceptions and encourage uptake of protective behaviour

2. **Identify and address potential public misperceptions around pandemic influenza**

   Correcting misperceptions and improving awareness of pandemic influenza will not only support the uptake of protective behaviours but may also eliminate or alleviate potential strains on resources. Improved public understanding of transmission routes, for example, may not only encourage the uptake of recommended protective behaviours but also reduce the adoption of unhelpful behaviours. Additionally, recognizing the distinction between seasonal and pandemic influenza could reduce confusion over the need for two flu vaccines and, thus, encourage uptake.

3. **Public communications during a pandemic must provide explanations as well as advice**

   This research suggests that, in a pandemic, the public would seek information from the authorities around protective measures that could be taken. Providing explanatory information allows the public to understand the context in which advice is given. This is particularly relevant if public health guidance, such as around at-risk groups, may seem counterintuitive. Study participants were prepared to accept this but most indicated a desire for additional information; they wanted to be told not only 'what' but also 'why'.

4. **Ensure communication with the public is disseminated through a variety of media.**

   Population groups will seem information through different media formats. In the context of this study, younger adults displayed a marked preference for digital media whilst older adults were more inclined toward traditional media. A variety of media options must therefore be used to ensure message spread. Furthermore, to insure message saturation, public health communication will need to be reiterated.

5. **Be prepared to address preconceptions around risk and at-risk groups**

   This research suggest that older and younger adult perception of at-risk groups are consistent with established risk groups for seasonal influenza. As pandemic influenza often results in atypical risk; given the tendency to

affect younger adults, preconceptions around risk and at-risk groups will need to be addressed as misperceptions around risk may negatively impact public adherence to medical guidance. Risk, however, is not always unidimensional**;** many people in priority groups may not consider themselves to be at-risk given their own personal health whilst other individuals may be considered at-risk due to more than one condition.

6. **Work with partners (both public and private sector) to identify ways to reduce potential response barriers.**

   Whilst study participants in both population groups indicated high intent to adopt protective behaviour, several barriers were identified which, if addressed, could engage uptake. Reducing opportunity barriers and, improving accessibility, such as by establishing hand gel stations in public facilities and reducing wait times for medical assistance, would encourage the adoption of these behaviours. Whilst intent to vaccinate was high, concerns around the safety and efficacy of a pandemic vaccine were cited as a barrier. Addressing this type of concern, through communication, could reduce public anxiety and encourage uptake. Finally, voluntary isolation was the most problematic of the recommended behaviours with either day-to-day requirements (such as grocery shopping), existing commitments (either social or academic), and financial considerations (ie: the need to be employed) affecting participant ability and willingness to isolate. Government, in tandem with public and private sector partners, should examine options to encourage alternatives where possible (ie: remote working), and support mitigation measures where necessary.

9.5 Limitations of the Research

As with any study, there are limitations to this research. This research was exploratory in nature, geographically focused, and specific to two potentially at-risk population groups. The conclusions, therefore, of this study are specific to these conditions.

As this research was exploratory, qualitative research methods, specifically semi-structured individual and group interviews, were employed. This allowed for an in-

depth and responsive investigation into the risk perceptions, behavioural intentions, and communication needs of the target populations. Conversely, however, this also imposed a logistical limitation on the size of the population sample. As the population sample was drawn exclusively from the Greater London area, the results of this study are also geographically bounded. The characteristics which make London an interesting area of study from a pandemic planning perspective (ie: demographics, transit) can also have an effect on its residents. Londoners are more likely to be reliant on public transit, for example, than residents of Land's End.

Although this research is focused on older and younger adults, for the purposes of this study, younger adults were operationalized as university students in full-time study. It is therefore not possible to say that the younger adult results in this study are applicable to all individuals in this demographic as university students may not be fully representative of this cohort. Students are, for example, less likely to have children of their own and may have different responsibilities and schedules than someone in regular employment. Furthermore, the very nature of university could indicate that participants in this study may have a different level of education or public engagement than their peers. The older adult participants in this study, whilst not drawn from any one sector, were all recruited through gatekeepers such as older adult activity centres, local libraries and churches, and residential communities. Older adult participants, therefore, were all involved to some extent in their local community and were not part of the 'hard to reach' older adult population. Finally, as all study participants were volunteers, they also represent a somewhat self-selecting profile as individuals who were interested in engaging with the research.

This study has provided an indicative baseline of younger and older adult responses and needs in the event of a pandemic but further research would be required to confirm broader applicability or transferability.

9.6 Reflections on Future Research

This research was exploratory in nature and several themes that would benefit from further research emerged from the findings.

This research employed a modified Protection Motivation Theory approach which, by incorporating COM-B elements into PMT, allowed for a targeted assessment of perceptions of risk and efficacy whilst also including additional barriers or enablers to action, particularly environmental or societal factors. This wider model worked well in this research as it facilitated the examination of additional factors affecting intent to adopt protective behaviours across two population groups. There is merit in assessing whether this enhanced model would be as beneficial in other research.

The findings of this research indicate that, whilst initial public perceptions of at-risk groups are entrenched around traditional risk profiles, older and younger adults are both willing to accept atypical risk profiles during a pandemic, provided explanatory information is provided. Future research could build on this by testing acceptability of atypical risk with other at-risk or vulnerable populations as well as within the general public. This could also be tested with different threats which feature atypical or counter-intuitive risk profiles.

The terms 'risk' and 'vulnerability' whilst used throughout planning guidance and by practitioners, do not have standardized definitions and, thus, are not always used in the same way. This applies not only between countries or localities but also within. Although the lack of consistent use suggests this is not a planning priority, distinguishing between these terms may prove helpful in both planning and communicating with the public during an event with atypical risk profiles. In the case of a pandemic, although older adults may not be as at-risk, they may be more vulnerable due to a host of reasons such as a reliance on carers. The potential utility in clarifying these terms for professional purposes may indicate a topic that would be better served by future study and examination.

Whilst participants indicated general intention to adopt protective behaviours during a pandemic, voluntary isolation received the least support and significant barriers were raised to this behaviour. Further research focusing on isolation, rather than the other non-pharmaceutical behaviours and vaccination could expand on this study and identify specific ways to reduce barriers, improve communication, and increase behavioural uptake in the event of a pandemic.

Finally, this research examined two potentially at-risk population groups however, there are many other groups that could also be greatly affected in the event of a pandemic. Although this research suggests that older and younger adult communication needs are largely in line with the perceived needs of the general public, that may apply to other at-risk or vulnerable groups. Further research could examine whether risk perception, behavioural intentions, and communication needs remain consistent across other at-risk populations.

9.7 Final Conclusions

Recognizing the risk of and potential threat posed by a future pandemic, this research aimed to provide a better understanding of the perceptions, behavioural intentions and likely communication needs of potentially at-risk groups in order to improve health outcomes during a future influenza pandemic. Through interviews with practitioners and a review of pandemic planning guidance, practical considerations and challenges in pandemic planning were identified. Practitioners must take into account broad population and demographic characteristics in planning, whilst also recognizing that certain groups may have specific needs (ie: health or communication challenges) which must be addressed to the extent possible given time and resources. Authorities must also take into account business continuity challenges during a pandemic as a loss of staff and a need for additional resources may not only affect pandemic response capability but also impede day-to-day operations. Communicating with the public was identified both by practitioners and in planning guidance as a crucial component of pandemic response. Ensuring that both the message and the media are appropriate is necessary for effective communication. It is assumed the public will want clear,

concise information such as the nature of the pandemic and practical advice around protective measures. The use of a variety of media incorporating both new and traditional forms of media is viewed as the best way to reach the population as a whole.

Practitioner assumptions around population communication needs appear to be broadly consistent with the views expressed by older and younger adult participants. Information needs in relation to content were consistent across both demographic groups with participants wanting medical information (ie: symptoms, transmission routes, recommended protective behaviours) delivered in a clear and comprehensible fashion. Methods or preferred media for communication varied greatly between demographic groups with older adults preferring traditional media and younger adults preferring new media sources.

Participant knowledge of pandemic influenza was fairly consistent across all three study groups and based largely in the notion of pandemics involving diseases with a wide impact; both in terms of geography and numbers of individuals affected. Some confusion around risk and transmission routes arose over the tendency to name the flu after it's zoonotic origin. In addition, the distinction between epidemic and pandemic was not always clearly understood. The findings of this research suggest that, in the early stage of a pandemic, older and younger adult perceptions of risk would be heavily influenced by perception of geographic separation, or proximity, and of morbidity/mortality rates. Once a pandemic is underway, however, perceptions of risk shifted to more personal or individual characteristics such as age, health, and lifestyle. Although very few participants initially identified the potential for pandemic influenza to skew young in its risk profile, most participants were willing to accept that populations not usually affected by seasonal influenza might be at risk in a pandemic. In phase two of the research, a majority of participants were willing to accept that older adults might not be a priority group for vaccination but many struggled to accept that older adults might be at lower risk than other population groups. Participants in this phase of the research frequently indicated a desire for additional explanatory

information around the determination of risk, regardless of whether they had received the enhanced information leaflet.

Perceptions of behavioural efficacy across all five target behaviours, and across all three study groups, was high. Self-efficacy was supported for all behaviours though isolation did not rank nearly so high. Capability barriers to action were limited and only affected two behaviours (respiratory hygiene and vaccination), however, they represented physical challenges which would be difficult to rapidly overcome. Several opportunity barriers to action were identified though they fell mainly into the category of public convenience and could be dealt with or addressed without too much difficulty. Lastly, motivational influencers to behaviour change centred around risk perception and social norms.

The findings of this study suggest areas where continued research would be beneficial. Areas of particular note include further testing of the enhanced PMT model, perceptions of risk and acceptance of atypical risk profiles amongst populations other than younger and older adults, and methods to promote or support the uptake of voluntary isolation during an influenza pandemic.

Bibliography

Abdel-Haq, N M, and B I Asmar. “Novel Swine-Origin Influenza A: The 2009 H1N1 Influenza Virus.” *Indian Journal of Pediatrics* 78, no. 1 (2011): 74–80.

Abraham, C, and P Sheeran. “The Health Belief Model.” In *Predicting Health Behaviour*, edited by M Connor and P Norman, 28–80. Maidenhead: McGraw-Hill Education, 2003.

Adams, V, S R Kaufman, T van Hattum, and S Moody. “Aging Disaster: Mortality, Vulnerability, and Long-Term Recovery among Katrina Survivors.” *Medical Anthropology* 30, no. 3 (2011): 247–70.

Agarwal, V. “A/H1N1 Vaccine Intentions in College Students: An Application of the Theory of Planned Behaviour.” *Journal of American College Health* 62, no. 6 (2014): 416–24.

Age UK. “Changes to State Pension Age.” Accessed February 16, 2016. http://www.ageuk.org.uk/money-matters/pensions/changes-to-state-pension-age/.

AirTEXT. “Air Quality, UV, Pollen and Temperature Forecasts for Greater London and the South East.” airTEXT. Accessed December 7, 2018. http://www.airtext.info/signup.

Andre, FE, R Booy, HL Hock, J Clemens, Sk Datta, TJ John, BW Lee, et al. “Vaccination Greatly Reduces Disease, Disability, Death and Inequity Worldwide.” *Bulletin of the World Health Organization* 86, no. 2 (2008): 81–160.

Atkins, L, and Michie. “Changing Eating Behaviour: What Can We Learn from Behavioural Science?” *Nutrition Bulletin* 38, no. 1 (2013): 30–35.

Austin Alchon, SA. *A Pest in the Land: New World Epidemics in a Global Perspective*. Albuquerque: University of New Mexico Press, 2003.

Australian Department of Health. “Australian Health Management Plan for Pandemic Influenza,” 2014. http://www.health.gov.au/internet/main/publishing.nsf/content/519F9392797E2DDCCA257D47001B9948/$File/AHMPPI.pdf.

Barker, F, L Atkins, and S de Lusignan. “Applying the COM-B Behaviour Model and Behaviour Change Wheel to Develop an Intervention to Improve Hearing-Aid Use in Adult Auditory Rehabilitation.” *International Journal of Audiology* 55 (2016): S90–98.

Barry, JM. “Observations on Past Influenza Pandemics.” *Disaster Medicine and Public Health Preparedness* 3 (2009): S95–99.

Barry, T, S Manning, MS Lee, R Eggleton, S Hampton, J Kaur, MG Baker, and N Wilson. “Respiratory Hygiene Practices by the Public during the 2009 Influenza Pandemic: An Observational Study.” *Influenza & Other Respiratory Viruses* 5, no. 5 (2011): 317–20.

Baum, NM, PD Jacobsen, and SD Goold. “‘Listen to the People’: Public Deliberation about Social Distancing Measures in a Pandemic.” *American Journal of Bioethics* 9, no. 11 (2009): 4–14.

BBC News. “Who Was Alexander Litvinenko.” BBC News, 2013.

Beaton, R, and S Murphy. “Psychosocial Responses to Biological and Chemical Terrorist Threats and Events. Implications for the Workplace.” *American*

Association of Occupational Health Nurses Journal 50, no. 4 (2002): 182–89.
Bell, B. "Oldest Person in the UK: How Has Life Changed?" BBC News, 2018. https://www.bbc.co.uk/news/uk-england-45500594.
Beveridge, M, and C Sellwood. "Pandemic Influenza Framework," 2014. https://www.london.gov.uk/sites/default/files/gla_migrate_files_destination/LRF_PanFlu_Framework_6.0.pdf.
Bish, A, and S Michie. "Demographic and Attitudinal Determinants of Protective Behaviours during a Pandemic: A Review." *British Journal of Health Psychology* 15, no. 4 (2010): 787–824.
Bish, A, L Yardley, A Nicholl, and S Michie. "Factors Associated with Uptake of Vaccination against Pandemic Influenza: A Systematic Review." *Vaccine* 29 (2011): 6472–84.
Blettner, M, B Schlehofer, J Breckenkamp, B Kowall, S Schmiedel, U Reis, P Potthoff, J Schuz, and G Berg-Beckholl. "Mobile Phone Base Stations and Adverse Health Effects: Phase 1 of a Population-Based, Cross-Sectional Study in Germany." *Occupational and Environmental Medicine* 66 (2009): 118–23.
Boin, A, P't Hart, E Stern, and B Sundelius. *The Politics of Crisis Management: Public Leadership under Pressure*. New York: Cambridge University Press, 2005.
Boin, A, A McConnell, and P't Hart. "Governing after Crisis." In *Governing after Crisis: The Politics of Investigation, Accountability and Learning*, edited by A Boin, A McConnell, and P't Hart, 3–32. New York: Cambridge University Press, 2008.
Boscarino, J, C Figley, R Adams, S Galea, H Resnick, A Fleischman, M Bucuvalas, and Gold J. "Adverse Reactions Associated With Studying Persons Recently Exposed to Mass Urban Disaster." *Journal of Nervous and Mental Disease* 192, no. 8 (2004): 515–24.
Bowling, A. *Research Methods in Health: Investigating Health and Health Services*. Fourth. Maidenhead: Open University Press McGraw-Hill Education, 2014.
Braun, V, and V Clarke. "Using Thematic Analysis in Psychology." *Qualitative Research in Psychology* 3, no. 2 (2006): 77–101.
Braun, Virginia, and V Clarke. "Reflecting on Reflexive Thematic Analysis." *Qualitative Research in Sport, Exercise and Health* 11, no. 4 (2019): 589–97.
Briseno, M, and C England. "Science and Security: The Moratorium on H5N1 'Gain-of-Function' Experiments." Federation of American Scientists, 2013. https://fas.org/pir-pubs/science-and-security-the-moratorium-on-h5n1-gain-of-function-experiments-2/.
Brooks, Joanna, and Nigel King. "Qualitative Psychology in the Real World: The Utility of Template Analysis." In *2012 British Psychological Society Annual Conference*, 2012.
Brooks, Joanna, Serena McCluskey, Emma Turley, and Nigel King. "The Utility of Template Analysis in Qualitative Psychology Research." *Qualitative Research in Psychology* 12, no. 2 (2015): 202–22.
Bryman, A. "The Debate about Quantitative and Qualitative Research: A Question of Method or Epistemology?" *The British Journal of Sociology* 35, no. 1 (1984): 75–92.
Bults, M, D Beaujean, O de Zwart, G Kok, P van Empelen, JE van Steenbergen, JH Richardus, and H Voeten. "Perceived Risk, Anxiety, and Behavioural Responses

of the General Public during the Early Phase of the Influenza A (H1N1) Pandemic in the Netherlands: Results of Three Consecutive Online Surveys." *BMC Public Health* 11 (2011).

CBC News. "Health Canada Apologizes for Body Bags," 2009. http://www.cbc.ca/news/canada/manitoba/health-canada-apologizes-for-body-bags-1.790351.

Chaitin, J, R Sternberg, H Arad, L Barzili, N Deray, and S Shinhar. "'I May Look 75, but I'm Really a Pioneer': Concept of Self and Resilience among Israeli Elder Adults Living in a War Zone." *Journal of Happiness Studies* 14, no. 5 (2013): 1601–19.

Chermak, T. "Studying Scenario Planning: Theory, Research Suggestions, and Hypotheses." *Technological Forecasting & Social Change* 72 (2005): 59–73.

Christensen, JJ, ED Richey, and H Castaneda. "Seeking Safety: Predictors of Hurricane Evacuation of Community-Dwelling Families Affected by Alzheimer's Disease or a Related Disorder in South Florida." *American Journal of Alzheimers Disease and Other Dementias* 28, no. 3 (2013): 682–92.

Claver, M, A Dobalian, JJ Fickel, KA Ricci, and MH Mallers. "Comprehensive Care for Vulnerable Elderly Veterans during Disasters." *Archives of Gerontology and Geriatrics* 56, no. 1 (2013): 205–13.

Coe, AB, SB Gatewood, LR Moczygemba, JV Goode, and JO Beckner. "The Use of the Health Belief Model to Assess Predictors of Intent to Receive the Novel (2009) H1N1 Influenza Vaccine." *Innovations in Pharmacy* 3, no. 2 (2012): 1–11.

Conner, M, and P Norman. *Predicting Health Behavior: Research and Practice with Social Cognition Models*. Maidenhead: Open University Press, 2005.

Covello, VT. "Strategies for Overcoming Challenges to Effective Risk Communication." In *Handbook of Risk and Crisis Communication*, edited by RL Heath and HD O'Hair, 143–67. Abingdon: Routledge, 2010, 2010.

Crosier, A, D McVey, and J French. "By Failing to Prepare You Are Preparing to Fail': Lessons from the 2009 H1N1 'swine Flu' Pandemic." *European Journal of Public Health* 25, no. 1 (2015): 135–39.

Curtis, VA, LO Danquah, and RV Aunger. "Planned, Motivated and Habitual Hygiene Behaviour: An Eleven Country Review." *Health Education Research* 24, no. 4 (2009): 655–73.

Davis, R, R Campbell, Z Hildon, L Hobbs, and S Michie. "Theories of Behaviour and Behaviour Change across the Social and Behavioural Sciences: A Scoping Review." *Health Psychology* 9, no. 3 (2015): 323–44.

Deans, GD, HG Stiver, and JE McElhaney. "Influenza Vaccines Provide Diminished Protection but Are Cost-Saving in Older Adults." *Journal of Internal Medicine* 267, no. 2 (2010): 220–27.

Decker, JF, and RM Slawson. "An Evaluation of Behavioral Health Compliance and Microbial Risk Factors on Student Populations Within a High-Density Campus." *Journal of American College Health* 60, no. 8 (2012): 584–95.

Demakakos, P, E Gjonca, and J Nazroo. "Age Identity, Age Perceptions, and Health." *Annals of the New York Academy of Science* 114, no. 1 (2007): 279–87.

Denscombe, M. *The Good Research Guide*. Fourth Edi. Maidenhead: Open University Press McGraw-Hill Education, 2013.

Department of Health. "UK Influenza Pandemic Preparedness Strategy 2011," 2011.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213717/dh_131040.pdf.
Dickerson, P. *Social Psychology: Traditional and Critical Perspectives*. Harlow: Pearson Education Limited, 2012.
Emergency Planning and Business Continuity Team. "London Borough of Bexley: Major Emergency Plan," 2014. https://www.whatdotheyknow.com/request/425347/response/1028981/attach/4/Bexley general emergency plan 2014 Version 4.pdf?cookie_passthrough=1.
Etingen, B, SL LaVela, S Miskevics, and B Goldstein. "Health Information during the H1N1 Influenza Pandemic: Did the Amount Received Influence Infection Prevention Behaviors?" *Journal of Community Health* 38, no. 3 (2013): 443–50.
European Centre for Disease Prevention and Control. "Pandemic Influenza Preparedness in the EU/EEA-Status Report as of Autumn 2007," 2007. https://ecdc.europa.eu/sites/portal/files/media/en/publications/Publications/0712_TER_Pandemic_Influenza_Preparedness_in_EU_EEA.pdf.
Evans, D. "Nightmare Scenario: The Fallacy of Worst-Case Thinking." *Risk Management*, 2012.
Evans, G, A Bostrom, and RB Johnston. "Risk Communication and Vaccination: Summary of a Workshop." Washington, DC, 1997.
Fitzpatrick, M. "15 New Cases of Swine Flu Confirmed in Canada." *Calgary Herald*, April 30, 2009. http://www.calgaryherald.com/health/cases+swine+confirmed+canada/1545978/story.html.
Fleming, DM, and AJ Elliot. "The Impact of Influenza on the Health and Health Care Utilisation of Elderly People." *Vaccine* 23 (2005): S1-9.
Flight, C. "Smallpox: Eradicating the Scourge." BBC, 2011. http://www.bbc.co.uk/history/british/empire_seapower/smallpox_01.shtml.
Galea, S, A Nandi, J Stuber, J Gold, R Acierno, C Best, M Bucuvalas, S Rudenstine, J Boscarino, and H Resnick. "Participant Reactions to Survey Research in the General Population after Terrorist Attacks." *Journal of Traumatic Stress* 18, no. 5 (2005): 461–65.
Garcia-Continente, X, G Serral, MJ Lopez, A Perez, and M Nebot. "Long-Term Effect of the Influenza A/H1N1 Pandemic: Attitudes and Preventive Behaviours One Year after the Pandemic." *European Journal of Public Health* 23, no. 4 (2013): 679–81.
Gaygisiz, U, E Gaygisiz, T Ozkan, and T Lajunen. "Individual Differences in Behavioral Reactions to H1N1 during a Later Stage of the Epidemic." *Jounral of Infection and Public Health* 5, no. 1 (2012): 9–21.
Ghosh, S, and J Heffernan. "Influenza Pandemic Waves under Various Mitigation Strategies with 2009 H1N1 as a Case Study." *PLOS One* 5, no. 12 (2010): e14307.
Gigerenzer, G. "Out of the Frying Pan into the Fire: Behavioral Reactions to Terrorist Attacks." *Risk Analysis* 26, no. 2 (2006): 347–51.
Glik, DC. "Risk Communication for Public Health Emergencies." *Annual Review of Public Health* 28 (2007): 33–54.
Godoy, P, J Castilla, M Delgado-Rodriguez, V Martin, N Soldevila, J Alonso, J Astray,

et al. “Effectiveness of Hand Hygiene and Provision of Information in Preventing Influenza Cases Requiring Hospitalization.” *Preventive Medicine* 54, no. 6 (2012): 434–39.
Gray, D. *Doing Research in the Real World*. Second Edi. London: SAGE Publications, 2009.
Greenwich Clinical Commissioning Group. “Greenwich CCG Pandemic Flu Plan,” 2015. http://www.greenwichccg.nhs.uk/News-Publications/Policies/Greenwich CCG Pandemic Flu Plan.pdf.
Greer, AL, A Tuite, and DN Fisman. “Age, Influenza Pandemics and Disease Dynamics.” *Epidemiology & Infection* 138, no. 11 (2010): 1542–49.
Guttman, Nurit. “Ethical Dilemmas in Health Campaigns.” *Health Communication* 9, no. 2 (1997): 155–90.
Haringey Resilience Forum. “Multi-Agency Pandemic Influenza Plan,” 2015. https://www.haringey.gov.uk/sites/haringeygovuk/files/haringey_multi-agency_pandemic_influenza_plan_official_v1_issued.pdf.
Harrow Primary Care Trust. “Harrow PCT Influenza Pandemic Plan,” 2009. http://harrow.gov.uk/www2/documents/s62302/Harrow PCT Influenza Pandemic Plan Report.pdf.
Health Protection Agency. “Health Protection Agency Has Closed.” Gov.uk, 2013. https://www.gov.uk/government/organisations/health-protection-agency.
Heath, RL, and HD O’Hair. *Handbook of Risk and Crisis Communication*. New York: Routledge, 2010.
Hilyard, KM, VS Freimuth, D Musa, S Kumar, and SC Quinn. “The Vagaries of Public Support for Government Actions in Case of a Pandemic.” *Health Affairs* 29, no. 12 (2010): 2294–2301.
Hine, D. “The 2009 Influenza Pandemic: An Independent Review of the UK Response to the 2009 Influenza Pandemic,” 2010.
Ho, MC, D Shaw, S Lin, and Y-C Chiu. “How Do Disaster Characteristics Influence Risk Perception?” *Risk Analysis* 28, no. 3 (2008): 635–43.
Hoogeveen, J, E Tesliuc, R Vakis, and S Dercon. “A Guide to the Analysis of Risk, Vulnerability and Vulnerable Groups,” n.d. http://siteresources.worldbank.org/INTSRM/Publications/20316319/RVA.pdf.
Horton, H. “This Map Perfectly Displays the Diversity of London.” *The Telegraph*, October 12, 2015.
House of Lords and House of Commons-Joint Committee on the National Security Strategy. “‘The Next National Security Strategy’ First Report of Session 2014-2015,” 2015.
Huerta, F, and R Horton. “Coping Behaviour of Elderly Flood Victims.” *The Gerontologist* 18, no. 6 (1978): 541–46.
Ichiseki, H. “Features of Disaster-Related Deaths after the Great East Japan Earthquake.” *The Lancet* 381, no. 9862 (2013).
International Atomic Energy Agency. “The Radiological Accident in Goiania,” 1988. http://www-pub.iaea.org/mtcd/publications/pdf/pub815_web.pdf.
Jackson, C, L Eliasson, B Barber, and J Weinman. “Applying COM-B to Medication Adherence.” *European Health Psychologist* 16, no. 1 (2014): 7–17.
Jain, A, A.J van Hoek, D Boccia, and S.L Thomas. “Lower Vaccine Uptake amongst Older Individuals Living Alone: A Systematic Review and Meta-Analysis of

Social Determinants of Vaccine Uptake." *Vaccine* 35 (2017): 2315–28.
Jain, SL, L Kamimoto, AM Bramley, AM Schmitz, SR Benoit, J Louie, and DE Sugarman. "Hospitalized Patients with 2009 H1N1 Influenza in the United States." *New England Journal of Medicine* 361, no. 20 (2009): 1935–44.
Jehn, M, Y Kim, B Bradley, and T Lant. "Community Knowledge, Risk Perception, and Preparedness for the 2009 Influenza A/H1N1 Pandemic." *Journal of Public Health Management & Practice* 17, no. 5 (2011): 347–52.
Jivraj, N, and A Butler. "The 1918-19 Influenza Pandemic Revisited." *Journal of the Royal College of Physicians of Edinburgh* 43, no. 4 (2013): 347–52.
Katz, JM, J Plowden, M Renshaw-Hoelscher, XH Lu, TM Tumpey, and S Sambhara. "Immunity to Influenza-the Challenges of Protecting an Aging Population." *Immunologic Research* 29, no. 1–3 (2004): 113–24.
———. "Immunity to Influenza: The Challenges of Protecting an Aging Population." *Immunol Res* 29, no. 1–2 (2004): 113–24.
Katz, RL, L May, M Sanza, L Johnston, and B Petinaux. "H1N1 Preventive Health Behaviors in a University Setting." *Journal of American College Health* 60, no. 1 (2012): 46–56.
Keller, JJ, JH Kim, JCH Lau, Ah Wong, and SM Griffiths. "Intention to Engage in Preventive Behaviors in Response to the A/H1N1 Pandemic Among University Entrants in Four Chinese Cities." *Asia-Pacific Journal of Public Health* 26, no. 1 (2014): 42–47.
King's College London. "King's by Numbers." King's College London, n.d.
———. "Your Region." Study at King's. Accessed November 1, 2018. https://www.kcl.ac.uk/study/international/offices/index.aspx.
Kiviniemi, MT, PK Ram, LT Kozlowski, and KM Smith. "Perceptions of and Willingness to Engage in Public Health Precautions to Prevent 2009 H1N1 Influenza Transmission." *BMC Public Health2* 11 (2011): 152.
Kok, G, R Jonkers, R Gelissen, R Meertens, H Schaalma, and O de Zwart. "Behavioural Intentions in Response to an Influenza Pandemic." *BMC Public Health* 10 (2010): 174.
Kovacs, G, Z Kalo, K Jahnz-Rozyk, J Kyncl, A Csohan, and A Pistol. "Medical and Economic Burden of Influenza in the Elderly Population in Central and Eastern European Countries." *Human Vaccines & Immunotherapeutics* 10, no. 2 (2014): 428–40.
Lambeth and Southwark Public Health. "Pandemic Flu Coordination Plan Lambeth & Southwark," 2016. http://moderngov.southwark.gov.uk/ieIssueDetails.aspx?IId=50009572&Opt=3.
Lang, PO, D Samaras, N Samaras, S Govind, and R Aspinall. "Influenza Vaccination in the Face of Immune Exhaustion: Is Herd Immunity Effective for Protecting the Elderly?" *Influenza Research and Treatment*, 2011, 419216–419216.
Lau, JT, S Griffiths, KC Choi, and C Lin. "Prevalence of Preventive Behaviours and Associated Factors during the Early Phase of the H1N1 Influenza Epidemic." *American Journal of Infection Control* 38, no. 5 (2010): 374–80.
Lemyre, L, M Clement, W Corneil, L Craig, P Boutette, M Tyshenko, N Karyakina, R Clarke, and D Kewski. "A Psychosocial Risk Assessment and Management Framework to Enhance Response to CBRN Terrorism Threats and Attacks."

Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science 3, no. 4 (2005).

Liao, Q, BJ Cowling, WW Lam, DM Ng, and R Fielding. "Anxiety, Worry and Cognitive Risk Estimate in Relation to Protective Behaviors during the 2009 Influenza A/H1N1 Pandemic in Hong Kong: Ten Cross-Sectional Surveys." *BMC Infectious Diseases* 14 (2014): 169.

Liao, Q, BJ Cowling, W Wing Tak Lam, and R Fielding. "Factors Affecting Intention to Receive and Self-Reported Receipt of 2009 Pandemic (H1N1) Vaccine in Hong Kong: A Longitudinal Study." *PLOS One*, 2011. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0017713.

London Borough of Barking and Dagenham. "Barking & Dagenham Multi-Agency Pandemic Influenza Plan," 2015.

London Borough of Tower Hamlets. "Multi Agency Pandemic Influenza Plan." London, 2018. https://www.towerhamlets.gov.uk/Documents/Community-safety-and-emergencies/Flu-Pandemic-Plan-2018.pdf.

Low, DE. "Pandemic Planning: Non-Pharmaceutical Interventions." *Respirology*, 2008, S44–48.

Luborsky, M, and R Rubinstein. "Sampling in Qualitative Reserach." *Research on Aging* 17, no. 1 (1995): 89–113.

Madden, TJ, PS Ellen, and I Ajzen. "A Comparison of the Theory of Planned Behavour and the Theory of Reasoned Action." *Personality and Social Psychology Bulletin* 18, no. 1 (1992): 3–9.

Maddux, JE, and RW Rogers. "Protection Motivation and Self-Efficacy: A Revised Theory of Fear Appeals and Att." *Journal of Experimental Psychology* 19 (1983): 469–79.

Maier, K, J Berkman, and D Chatkoff. "Novel Virus, Atypical Risk Group: Understanding Young Adults in College as an under-Protected Population during H1N1 2009." *PLOS Currents* 4 (2012).

Majid, S, and NA Rahmat. "Information Needs and Seeking Behavior During the H1N1 Virus Outbreak." *Journal of Information Management* 1, no. 1 (2013): 42–53.

Marshall, H, R Tooher, J Collins, and F Mensah. "Awareness, Anxiety, Compliance: Community Perceptions and Response to the Threat and Reality of an Influenza Pandemic." *American Journal of Infection Control* 40, no. 3 (2012): 270–72.

Mas, FS, HE Jacobsen, A Olivarez, CE Hsu, and HH Juo. "Communicating H1N1 Risk to College Students: A Regional Cross-Sectional Survey Study." *Journal of Homeland Security and Emergency Management* 9, no. 1 (2012).

Maurer, J, L Uscher-Pines, and KM Harris. "Perceived Seriousness of Seasonal and A(H1N1) Influenzas, Attitudes toward Vaccination, and Vaccine Uptake among U.S. Adults: Does the Source of Information Matter?" *Preventive Medicine: An International Journal Devoted to Practice and Theory* 51, no. 2 (2010): 185–87.

Mayor, A. *Greek Fire, Poison Arrows and Scorpion Bombs*. New York: Overlook Press, 2009.

McClelland, E, R Amlot, MB Rogers, GJ Rubin, J Tesh, and JM Pearce. "Psychological and Physical Impacts of Extreme Events on Older Adults: Implications for Communications." *Disaster Medicine and Public Health Preparedness* 11, no. 1

(2017): 127–34.
Merriam-Webster. “Security.” *Merriam-Webster*, n.d.
Michie, S, L Atkins, and RT West. *The Behaviour Change Wheel: A Guide to Designing Interventions*. Great Britain: Silverback Publishing, 2014.
Michie, S, M van Stralen, and RT West. “The Behaviour Change Wheel: A New Method for Characterising and Designing Behaviour Change Interventions.” *Implementation Science* 6, no. 42 (2011).
Michie, S, RT West, R Campbell, J Brown, and H Gainforth. *ABC of Behaviour Change Theories*. Great Britain: Silverback Publishing, 2014.
Morens, DM, and JK Taubenberger. “Pandemic Influenza: Certain Uncertainties.” *Reviews in Medical Virology* 21, no. 5 (2011): 262–84.
Morris, J, M Marzano, N Dandy, and L O’Brien. “Theories and Models of Behaviour and Behaviour Change.” Forestry Commission England, 2012. https://www.forestry.gov.uk/pdf/behaviour_review_theory.pdf/$FILE/behaviour_review_theory.pdf.
Morrison, LG, and L Yardley. “What Infection Control Measures Will People Carry out to Reduce Transmission of Pandemic Influenza? A Focus Group Study.” *BMC Public Health* 9 (2009): 258.
Morse, SS. “Pandemic Influenza: Studying the Lessons of History.” *Proceedings of the National Academy of Sciences of the United States of America* 104, no. 18 (2001): 7313–14.
Mowbray, F, A Marcu, C Godinho, S Michie, and L Yardley. “Communicating to Increase Public Uptake of Pandemic Flu Vaccination in the UK: Which Messages Work?” *Vaccine* 34 (2016): 3268–3274.
Munro, M. “Controversial Lab-Made Super-Flu Experiment Gets Green Light despite Bioterrorism Fears.” *National Post*, 2013.
Myers, LB, and R Goodwin. “Determinents of Adults’ Intention to Vaccinate against Pandemic Swine Flu.” *BMC Public Health* 11, no. 1 (2011): 15.
Neuwirth, K, S Dunwoody, and RJ Griffin. “Protection Motivation and Risk Communication.” *Risk Analysis* 20, no. 5 (2000): 721–34.
New Zealand Ministry of Health. “New Zealand Influenza Pandemic Plan: A Framework for Action.” Wellington, 2017. https://www.health.govt.nz/publication/new-zealand-influenza-pandemic-plan-framework-action.
Nguyen, AM, and A Noymer. “Influenza Mortality in the United States, 2009 Pandemic: Burden, Timing and Age Distribution.” *PLOS One* 8, no. 5 (2013): e64198.
NHS. “Who Should Have the Flu Vaccine?,” 2018. https://www.nhs.uk/conditions/vaccinations/who-should-have-flu-vaccine/.
Nishikiori, N, T Abe, DGM Costa, SD Dharmaratne, O Kunii, and K Moji. “Who Died as a Result of the Tsunami? Risk Factors of Mortality among Internally Displaced Persons in Sri Lanka: A Retrospective Cohort Analysis.” *BMC Public Health* 6 (2006).
OECD. “Recommendation of the Council on the Governance of Critical Risks,” 2014.
Pan-Canadian Public Health Network. “Canadian Pandemic Influenza Preparedness: Planning Guidance for the Health Sector,” 2015.
Parliamentary Office of Science and Technology. “H1N1 ‘Swine Flu’ Vaccine,” 2009.

www.parliament.uk/briefing-papers/POST-PN-331.pdf.
Pauly, John J, and Liese L Hutchison. “Moral Fables of Public Relations Practice: The Tylenol and Exxon Valdez Cases.” *Journal of Mass Media Ethics: Exploring Questions of Media Morality* 20, no. 4 (2005): 231–49.
Pietrzak, RH, SM Southwick, M Tracy, S Galea, and Norris. “Posttraumatic Stress Disorder, Depression, and Perceived Needs for Psychological Care in Older Persons Affected by Hurricane Ike.” *Journal of Affective Disorders* 138, no. 1–2 (2012): 96–103.
Prematunge, C, K Corace, A McCarthy, RC Nair, R Pugsley, and G Garber. “Factors Influencing Pandemic Influenza Vaccination of Healthcare Workers--a Systematic Review.” *Vaccine* 30, no. 32 (2012): 4733–43.
Prentice-Dunn, S, and RW Rogers. “Protection Motivation Theory and Preventive Health: Beyond the Health Belief Model.” *Health Education Research: Theory and Practice* 1, no. 3 (1986): 153–61.
Public Health Agency of Canada. “Lessons Learned Review: Public Health Agency of Canada and Health Canada Response to the 2009 H1N1 Pandemic,” 2010.
Public Health England. “Pandemic Influenza Response Plan,” 2014. https://www.gov.uk/government/publications/pandemic-influenza-response-plan.
Purssell, E, and A While. “Knowledge about Pandemic Influenza in Healthcare and Non-Healthcare Students in London.” *Health Education Journal* 70, no. 2 (2011): 217–24.
Ravert, RD, LY Fu, and GD Zimet. “Reasons for Low Pandemic H1N1 2009 Vaccine Acceptance within a College Sample.” *Advances in Preventive Medicine*, 2012, 242518–242518.
Reynolds, B. “Crisis and Emergency Risk Communication: Pandemic Influenza.” US Centers for Disease Control and Prevention, 2007. https://emergency.cdc.gov/cerc/resources/pdf/cerc-pandemicflu-oct07.pdf.
Reynolds, B, and MW Seegar. “Crisis and Emergency Risk Communication as an Integrative Model.” *Journal of Health Communication* 10, no. 1 (2005): 43–55.
Rodas, JR, CH Lau, ZZ Zhang, SM Griffiths, WC Luk, and JH Kim. “Exploring Predictors Influencing Intended and Actual Acceptability of the A/H1N1 Pandemic Vaccine: A Cohort Study of University Students in Hong Kong.” *Public Health* 126, no. 12 (2012): 1007–12.
Rogers, MB, R Amlot, GJ Rubin, S Wessely, and K Krieger. “Mediating the Social and Psychological Impacts of Terrorist Attacks: The Role of Risk Perception and Risk Communication.” *International Review of Psychiatry* 19, no. 3 (2007): 279–88.
Rogers, RW. “A Protection Motivation Theory of Fear Appeals and Attitude Change.” *The Journal of Psychology* 91, no. 1 (1975): 93–114.
Rosenstock, IM. “Historical Origins of the Health Belief Model.” *Health Education Monographs* 2, no. 4 (1974): 328–35.
Rousseau, C, N Moreau, M-P Dumas, I Bost, S Lefebvre, and L Atlani-Duault. “Public Media Communications about H1N1, Risk Perceptions and Immunization Behaviours: A Quebec-France Comparison.” *Public Understanding of Science* 24, no. 2 (2015): 225–40.
Roy, A. “Conservative Think Tank: 10 Countries With Universal Health Care Have Freer Economies Than The U.S.” *Forbes*, January 2015.

https://www.forbes.com/sites/theapothecary/2015/01/27/conservative-think-tank-10-countries-with-universal-health-care-are-economically-freer-than-the-u-s/#2dc842dc137e.
Rubenstein, H, A Marcu, L Yardley, and S Michie. “Public Preferences for Vaccination and Antiviral Medicines under Different Pandemic Flu Outbreak Scenarios.” *BMC Public Health* 15, no. 190 (2015).
Rubin, GJ, Y Finn, HWW Potts, and S Michie. “Who Is Sceptical about Emerging Public Health Threats? Results from 39 National Surveys in the United Kingdom.” *Public Health*, 2015, 1–10.
Rubin, GJ, L Page, O Morgan, RJ Pinder, and P Riley. “Public Information Needs after the Poisoning of Alexander Litvinenko with Polonoim-210 in London: Cross Sectional Telephone Survey and Qualitative Analysis.” *BMJ* 335, no. 1143 (2007).
Sadique, MZ, WJ Edmunds, RD Smith, WJ Meerding, O de Zwart, J Brug, and P Beutels. “Precautionary Behaviour in Response to Perceived Threat of Pandemic Influenza.” *Emerging Infectious Diseases* 13, no. 9 (2007): 1307–13.
Sakauye, KM, JE Streim, GJ Kennedy, P Kirwin, MD Llorente, SK Schultz, and S Srinivasan. “AAGP Position Statement: Disaster Preparedness for Older Americans: Critical Issues for the Preservation of Mental Health.” *American* 17, no. 11 (2009): 916–24.
Sathyanarayana Rao, TS, and C Andrade. “The MMR Vaccine and Autism: Sensation, Refutation, Retraction, and Fraud.” *Indian Journal of Psychiatry* 53, no. 2 (2011): 96–96.
Seale, H, JPI Mak, H Razee, and CR MacIntyre. “Examining the Knowledge, Attitudes and Practices of Domestic and International University Students towards Seasonal and Pandemic Influenza.” *BMC Public Health* 12 (2012).
Seegar, MW, B Reynolds, and TL Sellnow. “Crisis and Emergency Risk Communication in Health Contexts: Applying the CDC Model to Pandemic Influenza.” In *Handbook of Risk and Crisis Communication*, edited by RL Heath and HD O’Hair, 493–506. Abingdon: Routledge, 2010.
Sellwood, Chloe. “Operating Framework for Managing the Response to Pandemic Influenza.” Leeds, 2017.
Sheppard, B. “Mitigating Terror and Avoidance Behavior through the Risk Perception Matrix to Augment Resilience.” *Journal of Homeland Security and Emergency Management* 8, no. 1 (2011).
Sheppard, B, GJ Rubin, JK Wardman, and S Wessely. “Terrorism and Dispelling the Myth of the Panic Prone Public.” *Journal of Public Health Policy* 27, no. 3 (2006): 216–45.
Siegrist, M, and A Zingg. “The Role of Public Trust During Pandemics Implications for Crisis Communication.” *European Psychologist* 19, no. 1 (2014): 24–32.
Simonsen, L, MJ Clarke, NJ Cox, and K Fukuda. “Pandemic versus Epidemic Influenza Mortality: A Pattern of Changing Age Distribution.” *Journal of Infectious Diseases* 178, no. 1 (1998): 53–60.
Slovic, Paul. “Perceived Risk, Trust, and Democracy.” *Risk Analysis* 13, no. 6 (1993): 675–82.
Smith, D. “London’s Population High: Top Metropolis Facts.” BBC News, 2015.
Smith, LE, D D’Antoni, V Jain, JM Pearce, J Weinman, and GJ Rubin. “A Systematic

Review of Factors Affecting Intended and Actual Adherence with Antiviral Medication as Treatment or Prophylaxis in Seasonal and Pandemic Flu." *Influenza & Other Respiratory Viruses* 10 (2016): 462–78.
Sporton, RK, and S-A Frances. "Choosing Not to Immunize: Are Parents Making Informed Decisions?" *Family Practice* 18, no. 2 (2001): 181–88.
Standing Committee on Health-Parliament of Canada-Committee Hansard. "Testimony by Elaine Chatigny, Director General, Communications, Department of Health," 2009.
Stokes, J, and L Banderet. "Psychological Aspects of Chemical Defense and Warfare." *Military Psychology* 9, no. 4 (1997): 395–415.
Stone, F. "The 'Worried Well' Response to CBRN Events: Analysis and Solution Title." Maxwell Air Force Base, Alabama, 2007.
———. "The 'Worried Well' Response to CBRN Events: Analysis and Solutions." *The Counterproliferation Papers Future Warfare Series*, 2007. https://apps.dtic.mil/dtic/tr/fulltext/u2/a475818.pdf.
Strug, DL, SE Mason, and C Auerbach. "How Older Hispanic Immigrants in New York City Cope with Current Traumatic Stressors: Practice Implications." *Journal of Gerontological Social Work* 52, no. 5 (2009): 503–16.
Suar, D, S Mishra, and R Khuntia. "Placing Age Differences in the Context of the Orissa Supercyclone: Who Experiences Psychological Distress?" *Asian Journal of Social Psychology* 10, no. 2 (2007): 117–22.
Sypsa, V, T Livanios, M Pscichogiou, and M Malliori. "Public Perceptions in Relation to Intention to Receive Pandemic Influenza Vaccination in a Random Population Sample: Evidence from a Cross-Sectional Telephone Survey." *European Communicable Disease Bulletin* 14, no. 49 (2009).
Taha, SA, K Matheson, and H Anisman. "The 2009 H1N1 Influenza Pandemic: The Role of Threat, Coping, and Media Trust on Vaccination Intentions in Canada." *Journal of Health Communication* 18, no. 3 (2013): 278–90.
Taylor, MR, GJ Stevens, KE Agho, SA Kable, and B Raphael. "Crying Wolf? Impact of the H1N1 2009 Influenza Pandemic on Anticipated Public Response to a Future Pandemic." *Medical Journal of Australia* 197, no. 10 (2012): 561–64.
Teasdale, E, and L Yardley. "Understanding Responses to Government Health Recommendations: Public Perceptions of Government Advice for Managing the H1N1(Swine Flu) Influenza Pandemic." *Patient Education and Counseling* 85 (2011): 413–18.
Teasdale, E, L Yardley, W Schlotz, and S Michie. "The Importance of Coping Appraisal in Behavioural Responses to Pandemic Flu." *British Journal of Health Psychology* 17, no. 1 (2012): 44–59.
The Canadian Press. "Information Services Staff Has Grown 15% under Harper." *CBC News*, 2013.
The Economist. "The World's Deadliest Bioterrorist." *The Economist*, 2012. http://www.economist.com/node/21553448.
The World Bank. "Population Density (People per Sq. Km of Land Area)." Accessed December 3, 2016. https://data.worldbank.org/indicator/EN.POP.DNST.
———. "World Bank Group Ebola Response Fact Sheet.," 2015. http://www.worldbank.org/en/topic/health/brief/world-bank-group-ebola-fact-sheet.

———. “World Development Indicators: United Kingdom.” Accessed February 17, 2016. http://databank.worldbank.org/data/reports.aspx?source=2&country=GBR&series=&period=.
Tooher, R, JE Collins, JM Street, AJ Braunack-Mayer, and H Marshall. “Community Knowledge, Behaviours and Attitudes about the 2009 H1N1 Influenza Pandemic: A Systematic Review.” *Influenza & Other Respiratory Viruses* 7, no. 6 (2013): 1316–27.
Transport for London. “Annual Report and Statement of Accounts 2013/2014,” n.d.
Treasury Board of Canada Secretariat. “Communications Policy of the Government of Canada.,” 2012. http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?section=text&id=12316.
Tucker, J. *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons*. Cambridge, Massachusetts: MIT Press, 2000.
UK Cabinet Office. “Chapter 7: Communicating with the Public; Revision to Emergency Preparedness,” 2012. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/61030/Chapter-7-Communicating-with-the-Public_18042012.pdf.
———. “National Risk Register of Civil Emergencies,” 2015.
UK Civil Contingencies Secretariat. “Identifying People Who Are Vulnerable in a Crisis,” 2008.
UK Civil Service. “The Prime Minister Introduces a Civil Service Award for Clarity.” Gov.uk, 2015.
UK Department for Environment Food & Rural Affairs. “The National Adaptation Programme: Making the Country Resilient to a Changing Climate,” 2013.
UK Department of Health. “‘Catch It. Bin It. Kill It.’ Campaign to Help Reduce Flu Infections.” Gov.uk, 2013. https://www.gov.uk/government/news/catch-it-bin-it-kill-it-campaign-to-help-reduce-flu-infections.
———. “UK Pandemic Influenza Communications Strategy 2012,” 2012. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213268/UK-Pandemic-Influenza-Communications-Strategy-2012.pdf.
UK Department of Health Pandemic Influenza Preparedness Team. “UK Influenza Pandemic Preparedness Strategy,” 2011.
United Lincolnshire Hospitals. “Qualitative Research Terms.” Health Libraries in Lincolnshire Online. Accessed February 24, 2016. http://www.hello.nhs.uk/documents/Qualitative_Critical_Appraisal_Glossary.pdf.
United Nationa Office for Disarmament Affairs. “The Biological Weapons Convention,” n.d. http://www.un.org/disarmament/WMD/Bio/.
US Centers for Disease Control and Prevention. “CERC: Introduction,” 2014.
———. “Coughing & Sneezing,” 2009. http://www.cdc.gov/healthywater/hygiene/etiquette/coughing_sneezing.html.
———. “First Global Estimates of 2009 H1N1 Pandemic Mortality Released by CDC-Led Collaboration.” Influenza, 2012.

https://www.cdc.gov/flu/spotlights/pandemic-global-estimates.htm.
———. “Influenza (Flu): Selecting the Viruses in the Seasonal Influenza (Flu) Vaccine.” Selecting the Viruses in the Seasonal Influenza (Flu) Vaccine, 2015.
———. “Influenza (Flu): Types of Influenza Viruses,” 2014. http://www.cdc.gov/flu/about/viruses/types.htm.
———. “Past Pandemics.” Accessed August 10, 2018. https://www.cdc.gov/flu/pandemic-resources/basics/past-pandemics.html.
US Department of Health and Human Services. “H5N1 Avian Flu-H5N1 Bird Flu,” n.d.
US Government. “National Security Strategy May 2010,” n.d.
US Homeland Security. “National Strategy for Pandemic Influenza: Implementation Plan,” 2006. https://www.cdc.gov/flu/pandemic-resources/pdf/pandemic-influenza-implementation.pdf.
Van, D, M-L McLaws, J Crimmins, CR MacIntyre, and H Seale. “University Life and Pandemic Influenza: Attitudes and Intended Behaviour of Staff and Students towards Pandemic (H1N1) 2009.” *BMC Public Health* 10 (2010).
Wang, W, and L Ahern. “Acting on Surprise: Emotional Response, Multiple-Channel Information Seeking and Vaccination in the H1N1 Flu Epidemic.” *Social Influence* 10, no. 3 (2015): 137–48.
Williams, David E, and Glenda Treadaway. “Exxon and the Valdez Accident: A Failure in Crisis Communication.” *Communication Studies* 43, no. 1 (1992): 56–64.
Wilson, SL, and K Huttlinger. “Pandemic Flu Knowledge among Dormitory Housed University Students: A Need for Informal Social Support and Social Networking Strategies.” *Rural and Remote Health* 10, no. 4 (2010): 1526.
Witte, K, and M Allen. “A Meta-Analysis of Fear Appeals: Implications for Effective Public Health Campaigns.” *Health Education and Behaviour* 27, no. 5 (2000): 591–615.
World Health Organization. “Immunization.” Accessed November 10, 2018. http://www.who.int/topics/immunization/en/.
———. “Influenza,” n.d.
———. “Influenza (Seasonal), Fact Sheet N. 211,” 2014. http://www.who.int/mediacentre/factsheets/fs211/en/.
———. “Pandemic Influenza Preparedness and Response WHO Guidance Document,” 2009. http://www.who.int/influenza/resources/documents/pandemic_guidance_04_2009/en/.
———. “Pandemic Influenza Risk Management: WHO Interim Guidance,” 2013. http://www.who.int/influenza/preparedness/pandemic/GIP_PandemicInfluenzaRiskManagementInterimGuidance_Jun2013.pdf?ua=1.
———. “Pandemic Influenza Vaccine Manufacturing Process and Timeline,” 2009.
———. “The World Health Report 2007 A Safer Future: Global Public Health Security in the 21st Century,” 2007. http://www.who.int/whr/2007/whr07_en.pdf.
Yang, ZJ. “Predicting Young Adults’ Intentions to Get the H1N1 Vaccine: An Integrated Model.” *Journal of Health Communication* 20, no. 1 (2015): 69–79.
Yazgan, IC, C Dedeoglu, and Y Yazgan. “Disability and Post-Traumatic

Psychopathology in Turkish Elderly after a Major Earthquake." *International Psychogeriatrics* 18, no. 1 (2006): 184–87.

Zheng, Y, P Wu, C Ma, H Seale, CR MacIntyre, and Q Wang. "A Cross-Sectional Study of Factors Associated with Uptake of Vaccination against Influenza among Older Residents in the Postpandemic Season in Beijing, China." *BMJ Open* 3, no. 11 (2013).

Zottarelli, LK, TS Sunil, P Flott, and S Karbhari. "College Student Adoption of Non-Pharmaceutical Interventions during the 2009 H1N1 Influenza Pandemic: A Study of Two Texas Universities in Fall 2009." *Preventive Medicine* 55, no. 5 (2012): 497–99.

Appendices

Appendix A: Occupation of Practitioner Interviewees

PARTICIPANT NUMBER	OCCUPATION
PROA-01	Administrator of older adult activity program
PROA-02	Estate manager, older adult residence
PROA-03	London- adult social services officer
PROA-04	London- Emergency Planner
PROA-05	London - Emergency Planner
PROA-06	London - Emergency Planner
PROA-07	London - Emergency Planner
PROA-08	London - Emergency Planner
PROA-09	London- Public Health Specialist
PROA-10	London - Emergency Planner
PROA-11	London - Emergency Planner
PROA-12	National (UK)-Emergency Planner
PROA-13	National (UK)-Emergency Planner
PRYA-01	University administrator responsible for emergency planning
PRYA-02	University administrator responsible for emergency planning
PRYA-03	University administrator responsible for emergency planning
PRYA-04	University administrator responsible for emergency planning
PRYA-05	University administrator responsible for emergency planning
PRYA-06	University administrator responsible for emergency planning
PRYA-07	University administrator responsible for emergency planning
PRYA-08	University administrator responsible for emergency planning
PRYA-09	University administrator responsible for emergency planning
PRYA-10	University administrator responsible for emergency planning
PRYA-11	University administrator responsible for emergency planning
PRYA-12	University administrator responsible for emergency planning
PRYA-13	University administrator responsible for emergency planning

Appendix B: Practitioner Interview Schedules

Appendix B1: Older Adult Practitioner Interview Schedule

1. In your role as _____ , what sort of emergencies do you see most affecting your facility?

2. Does your facility have emergency plans in place? (Fire, natural disasters, terrorism, infectious disease)
   2a. If so, could you provide some examples of emergencies that these plans cover?
   2b. If so, are there processes in place for reviewing and updating these emergency plans?

3. In terms of emergency preparedness, do your programme participants have particular needs or characteristics that must be taken into account in the planning stage?
   3a. If so, how are these taken into account in emergency planning?

4. Do you currently communicate preparedness information to programme participants pre-event? *(Fire drill procedure, vaccination campaigns, communicable disease prevention and/or domestic violence.)*
   4a. If so, how is this information communicated?

5. Is there a situation where emergency communications were particularly effective?

6. Were you in your current role (or a similar one) during the 2009 H1N1 pandemic?
   6a. If so, what was your experience in managing the H1N1 pandemic from a programme perspective, particularly regarding communication?
   6b. If you were in the same role, has your facility/programme's approach to managing and communicating emergency situations changed since then?

<u>Pandemic Scenario (for questions 11-19)</u>

As you know, we are specifically interested in responding and communicating during an influenza pandemic. If we were at the start of a breaking pandemic, not dissimilar to the recent H1N1 where, to begin with, the severity of the pandemic was uncertain…

7. How would your facility respond to this situation?
   7a. At what stage would you respond? (*news reports of increased illness, WHO raises the alert, when Cabinet members are photographed leaving a COBRA meeting, WHO declares it a pandemic)*
   7b. What would prompt you to respond?

8. Are there particular challenges for your programme/facility in managing a pandemic?

9. Would you communicate with your programme participants in the event of a pandemic?
   9a. If so, at what stage in the unfolding pandemic would you communicate with them?
   9b. If so, how would you communicate with them

10. Where would you, in your capacity as **JOB TITLE** go to for information about the unfolding pandemic?

11. How do you think your programme participants would respond to a flu pandemic?

12. What type of information do you think your programme participants would need in the early weeks of a pandemic?

13. Do you think their information needs would change over the course of the pandemic,
   13a. If so, in what way would they change?
   13b. How would affect your communications with the participants?

14. What are the key challenges for communicating with programme participants during a pandemic scenario?
   14a. Are there ways to alleviate these challenges?

15. What do you think programme participants would expect from you in terms of communication?
   15a. How do you think programme participants would respond to your communications?
   15b. Who do you think your programme participants would view as trusted sources?

16. Are there external or internal resources that would assist in the implementation of your pandemic response?
   16a. Are there shared best practice forums across programmes/facilities?
   16b. If not, how useful do you think it would it be to have shared best practice forums?
   16c. Do you have partnerships (such as information sharing) with medical professionals and/or government agencies?
   16d. If not, how useful do you think it would it be to have these types of partnerships?

17. Do you have any further thoughts on issues relating to communicating about pandemic influenza with older adults?

Appendix B2: Local Government Practitioner Interview Schedule

1. What are the priority risks or emergencies for this Borough? Is the risk of a 'flu emergency one of them?
2. To what extent do you rely, for major emergencies which are expected to have widespread effect, on national emergency plans (like the national 'flu emergency strategy)? To what extent do you adapt these national emergency preparedness plans to the specific situation in your Borough?
   2a. which of your emergency preparedness plans are reviewed or tested?
   2b. how do you decide which plans should be reviewed/tested? (eg: regularly scheduled, response to an incident)
   2c. If so, how are they reviewed/tested? (ie: tabletop exercises, etc)

3. What are the general arrangements for warning and informing the population in the local area in the event of an emergency?
   3a. What avenues do you use to communicate? (ie: rely on national media; local media; local government website; leaflets; all of the above)
   3b. Do you target communications to different population groups?

4. In terms of emergency planning, how are risk and vulnerability defined?
   4a. Do these definitions change based on the emergency/situation?

5. Are vulnerable populations, in particular older adults, taken into account in the emergency planning and communication planning processes
   5a. If so, how are the vulnerable groups identified?
   5b. If so, are they or those responsible for their welfare, consulted during the planning process?
   5c. If so, how are issues of privacy/confidentiality dealt with?

6. Do you have a specific pandemic preparedness plan?
   6a. If so, is it accessible to the public?

7. Were you in your current role (or a similar one) during the 2009 H1N1 (Swine Flu) pandemic?
   7a. If so, what was your experience in managing the H1N1 pandemic, particularly regarding communication?
   7b. If so, has the experience of H1N1 changed the Borough's response to dealing with an influenza pandemic?

<u>Pandemic Scenario (for questions 11-19)</u>

As you know, I am specifically interested in responding and communicating during an influenza pandemic. If we were at the start of a breaking pandemic, not dissimilar to the 2009 H1N1 (Swine Flu) where, to begin with, the severity of the pandemic was uncertain…

8. How would the local government respond to this situation?
   8a. What would initially prompt you to respond? (*news reports of increased*

illness, WHO raises the alert, when Cabinet members are photographed leaving a COBRA meeting, WHO declares it a pandemic)

9. Where would you, in your professional capacity, go to for information about the unfolding pandemic?
   9a. If national government level, to what extent would you need to adapt national information (or communication materials) for a local level?
   9b. If not national government level, where (and why not)?

10. Are there particular challenges or advantages for you, at a local government level, in managing a pandemic?
    10a. Are there any challenges or advantages that might be unique to BOROUGH NAME?

11. How would you communicate with residents in the event of a pandemic?

12. Would you communicate with community groups, businesses, etc?
    12a. How would you communicate with these types of organizations?
    12b. What type of information would you be expected to provide?

13. How do you think the people of BOROUGH NAME, especially older adults, would respond to a flu pandemic? Is there evidence from 2009 to base this view on?

14. What type of information do you think your residents would require in the early stages of a pandemic?

15. Do you think their information needs would change over the course of the pandemic?
    15a. If so, in what way would they change? How would you respond to these changing needs?

16. How do you think residents will respond to your communications?
    16a. Do you think the council is a trusted source of information?
    16b. Do you foresee a challenge around competing streams of information? (ie: 'fake news', needing to feed a 24hr news cycle, the proliferation of 'experts' through social media, etc)

17. Do you evaluate your emergency plans and communications post-event?
    17a. If so, how?
    17b. If so, are community groups and representatives from vulnerable populations involved in the review process?
    17c. If no, why not?

18. Do you have any further thoughts on issues relating to preparing for and communicating about pandemic influenza from a local government perspective?

Appendix B3: University Practitioner Interview Schedule

1. In your role as **job title**, what sort of emergencies do you see most affecting your students?
2. Does your university have general emergency-preparedness plans, situation-specific plans or a combination? (Fire, natural disasters, terrorism, infectious disease)
   2a. Could you provide some examples of emergencies that these plans cover?

3. In terms of emergency preparedness, do your students have particular needs or characteristics that must be taken into account in the planning stage?
   3a. If so, how are these taken into account in emergency planning?

4. Are your emergency plans reviewed and altered?
   4a. If so, what prompts a review? (Regularly scheduled, statutory requirement, response to an incident)
   4b. If so, how frequently?

5. Do you currently communicate preparedness information pre-event to students? *(Fire drill procedure, vaccination campaigns, communicable disease prevention and/or domestic violence.)*
   5a. If so, how is this information communicated?

6. Is there a situation where a university-run emergency communications campaign has been particularly effective?

7. Were you in your current role (or a similar one) during the 2009 H1N1 pandemic?
   7a. If so, what was your experience in managing the H1N1 pandemic from a university perspective, particularly regarding communication?
   7b. If you were in the same role, has your university's approach to communicating changed since then?

<u>Pandemic Scenario (for questions 11-19)</u>
As you know, we are specifically interested in responding and communicating during an influenza pandemic. If we were at the start of a breaking pandemic, not dissimilar to the recent H1N1 where, to begin with, the severity of the pandemic was uncertain…

8. How would your university respond to this situation?
   8a. At what stage would you respond? (*news reports of increased illness, WHO raises the alert, when Cabinet members are photographed leaving a COBRA meeting, WHO declares it a pandemic)*
   8b. What would prompt you to respond?

9. Where would you, in your professional capacity, go to for information about the unfolding pandemic?

10. Would you communicate with your students in the event of a pandemic?
    10a. If so, at what stage in the unfolding pandemic would you communicate with your students?
    10b. If so, how would you communicate with your students

11. What are the particular challenges for a university in managing a pandemic?
    11a. Are there any challenges that might be unique to your university in managing an influenza pandemic?

12. Your university also manages student residential accommodation. Does this create an additional challenge or responsibility in communicating with students?
    12a. How is this dealt with?

13. How do you think your students would respond to a flu pandemic?

14. What type of information do you think your students would need in the early weeks of a pandemic?

15. Do you think their information needs would change over the course of the pandemic?
    15a. If so, in what way would they change? How would you respond to these changing needs?

16. When thinking about communicating with your students during a pandemic scenario such as the one I've described, what are the key challenges for communicating with students during a pandemic scenario?
    16a. Is there anything that makes this easier?

17. How do you think students will respond to your communications?
    17a. Do you think the university is a trusted source of information?
    17b. Where do you think your students would go for information?

18. What external or internal resources would assist the implementation of your pandemic response?
    18a. Are there shared best practice forums across academic institutions?
    18b. If not, how useful do you think it would it be to have shared best practice forums?
    18c. Do you have partnerships (such as information sharing) with medical professionals and/or government agencies?
    18d. If not, how useful do you think it would it be to have these types of partnerships?

19. Do you evaluate your emergency communications with your students?
    19a. If so, how?
    19b. If so, are students involved in a review process?
    19c. If no, why not?

20. Do you have any further thoughts on issues relating to communicating about pandemic influenza with your students?

Appendix C: Younger Adult Participants-First Phase

PARTICIPANT	AGE	GENDER	UNIVERSITY	STUDENT STATUS	LIVE IN STUDENT HALLS	PROGRAM OF STUDY	CHRONIC CONDITION REQUIRING DAILY MEDICATION	SEASONAL FLU VACCINE LAST YEAR
Interview 1, Participant 1	20	Female	King's College London	Overseas	Not this year but previously	Arts and Humanities	No	No
Interview 1, Participant 2	19	Female	King's College London	Home	Not this year but previously	Health and Medicine	No	No
Interview 1, Participant 3	25	Female	King's College London	Overseas	No	Health and Medicine	No	No
Interview 1, Participant 4	19	Female	King's College London	Home	Yes	Health and Medicine	No	No
Interview 2, Participant 1	20	Female	King's College London	EU	Not this year but previously	Psychology/Psychiatry	No	No
Interview 2, Participant 2	19	Female	King's College London	Home	Not this year but previously	Health and Medicine	No	No
Interview 2, Participant 3	20	Female	King's College London	Home	Not this year but previously	Arts and Humanities	No	No
Interview 3, Participant 1	20	Male	King's College London	Overseas	Not this year but previously	Arts and Humanities	No	No
Interview 3, Participant 2	18	Female	King's College London	Home	Yes	Natural Sciences and Mathematics	No	No
Interview 3, Participant 3	20	Female	King's College London	Overseas	Yes	Social Sciences	No	No
Interview 3, Participant 4	23	Female	LSHTM	Overseas	Yes	Psychology/Psychiatry	Yes	Yes
Interview 4, Participant 1	20	Male	King's College London	Home	Not this year but previously	Arts and Humanities	No	No
Interview 4, Participant 2	20	Male	LSE	Home	No	Social Sciences	No	Yes
Interview 4, Participant 3	21	Female	King's College London	EU	Yes	Arts and Humanities	No	No
Interview 4, Participant 4	18	Male	LSE	Overseas	Yes	Social Sciences	No	No
Interview 4, Participant 5		Male	LSE	Overseas	Not this year but previously	Social Sciences	No	No
Interview 4, Participant 6	19	Female	Coventry London	Overseas	No	Social Sciences	No	No
Interview 5, Participant 1	24	Female	King's College London	Home	No	Health and Medicine	No	No
Interview 5, Participant 2	20	Female	LSE	Overseas	Not this year but previously	Social Sciences	No	No
Interview 5, Participant 3	22	Female	UCL	Overseas	Not this year but previously	Social Sciences	No	No
Interview 5, Participant 4	20	Female	LSE	Overseas	Not this year but previously	Social Sciences	No	No
Interview 5, Participant 5	20	Female	City, University of London	EU	Not this year but previously	Arts and Humanities	No	No
Interview 5, Participant 6	23	Male	King's College London	EU	No	Health and Medicine	Prefer not to answer	No
Interview 5, Participant 7	23	Female	UCL	Overseas	Not this year but previously	Other	No	No
Interview 6, Participant 1	21	Female	Westminster	EU	No	Arts and Humanities	Yes	No
Interview 6, Participant 2	23	Male	LSE	Overseas	Yes	Other	No	No
Interview 6, Participant 3	23	Female	LSE	Overseas	Yes	Social Sciences	No	No
Interview 6, Participant 4	25	Female	UCL	EU	Not this year but previously	Other	No	No
Interview 7, Participant 1	22	Male	LSE	EU	Yes	Other	No	No
Interview 7, Participant 2	23	Female	LSE	Home	No	Psychology/Psychiatry	No	No
Interview 7, Participant 3	21	Female	LSE	EU	No	Natural Sciences and Mathematics	No	No
Interview 7, Participant 4	23	Female	King's College London	Home	Not this year but previously	Social Sciences	No	No
Interview 7, Participant 5	21	Female	LSE	Overseas	Not this year but previously	Social Sciences	No	No
Interview 7, Participant 6	24	Female	LSE	Overseas	No	Health and Medicine	No	No
Interview 8, Participant 1	23	Female	City, University of London	Overseas	No	Social Sciences	No	No

Interview 8, Participant 2	20	Male	LSE	Overseas	Not this year but previously	Arts and Humanities	No	Yes
Interview 8, Participant 3		Male	LSE	Home	Not this year but previously	Social Sciences	No	No
Interview 8, Participant 4	20	Male	LSE	Home	Not this year but previously	Other	No	No
Interview 9, Participant 1	24	Female	BPP University	Overseas	Not this year but previously	Law	No	No
Interview 9, Participant 2	20	Female	King's College London	Overseas	Not this year but previously	Natural Sciences and Mathematics	No	No
Interview 9, Participant 3	22	Male	City, University of London	Overseas	No	Natural Sciences and Mathematics	No	No

Appendix D: Older Adult Participants-First Phase

PARTICIPANT	AGE	GENDER	EDUCATION	OCCUPATION	BOROUGH OF RESIDENCE	LIVING ARRANGEMENT	HEALTH	FLU VACCINE
Interview 1, Participant 1	70-75	Male	A Levels	Bank Messenger	Enfield	With family or friends	Good	Yes
Interview 1, Participant 2	70-75	Female	No formal qualifications	Art Technician	Waltham Forest	With family or friends	Good	No
Interview 2, Participant 1	70-75	Male	No formal qualifications	Taxi Driver	Redbridge	With family or friends	Good	Yes
Interview 2, Participant 2	70-75	Female	A Levels	Office Worker	Redbridge	With family or friends	Good	Yes
Interview 3, Participant 1	70-75	Male	A Levels	English Language Teacher	Camden	With family or friends	Fair	Yes
Interview 3, Participant 2	75-80	Female	O Levels	Various Clerical Posts	Camden	Near family or friends but on your own	Very good	Yes
Interview 3, Participant 3	80-85	Male	Degree or higher		Camden	With family or friends	Very good	Yes
Interview 3, Participant 4	70-75	Female		Language teacher	Camden	With family or friends	Good	Yes
Interview 4, Participant 1	75-80	Male	A Levels	Government Service	Ealing	With family or friends	Very good	Yes
Interview 4, Participant 2	70-75	Male	A Levels	Insurance	Ealing	With family or friends	Good	No
Interview 4, Participant 3	75-80	Male	Degree or higher	Anaethetist	Ealing	With family or friends	Good	Yes
Interview 5, Participant 1	70-75	Female	Degree or higher	Actress	Wandsworth	With family or friends	Good	Yes
Interview 5, Participant 1	70-75	Female	Degree or higher	Health service manager	Enfield	With family or friends	Good	Yes
Interview 6, Participant 1	70-75	Female	A Levels	IT-Document Controller	Westminster	Near family or friends but on your own	Very good	Yes
Interview 7, Participant 1	70-75	Female	Other	Publican/Catering	Hammersmith and Fulham	With family or friends	Bad	Yes
Interview 7, Participant 2	70-75	Female		Nurse	Ealing	With family or friends	Very good	Yes
Interview 7, Participant 3	70-75	Female	No formal qualifications	Housewife	Hammersmith and Fulham	With family or friends	Good	Yes
Interview 7, Participant 4	70-75	Female	No formal qualifications				Bad	Yes
Interview 8, Participant 1	75-80	Female	Degree or higher	Various -professional	Lambeth	Near family or friends but on your own	Good	Yes
Interview 8, Participant 2	75-80	Female	O Levels	Wedding caterer	Lambeth	On your own, not near family or friends	Fair	Yes
Interview 9, Participant 1	85-90	Male	Degree or higher	Engineer	Ealing	With family or friends	Good	Yes
Interview 9, Participant 2	80-85	Male	A Levels	Airline Management	Ealing	With family or friends	Good	Yes
Interview 10, Participant 1	75-80	Female		Play and learning	Tower Hamlets	On your own, not near family or friends	Good	Yes
Interview 10, Participant 2	80-85	Female	No formal qualifications	Shopwork	Tower Hamlets	Near family or friends but on your own	Fair	Yes
Interview 10, Participant 3	80-85	Female		Nursery Nurse	Tower Hamlets		Fair	Yes
Interview 11, Participant 1	85-90	Female		Clerk	Runnymeade*	Near family or friends but on your own	Fair	Yes
Interview 11, Participant 2	70-75	Female	No formal qualifications	Carer	Runnymeade*	With family or friends	Very good	No
Interview 11, Participant 3	75-80	Female	No formal qualifications		Runnymeade*	Near family or friends but on your own	Good	Yes
Interview 11, Participant 4	85-90	Female	Degree or higher		Runnymeade*	Near family or friends but on your own	Good	Yes
Interview 12, Participant 1	85-90	Female	No formal qualifications	General nursing	Runnymeade*	On your own, not near family or friends	Fair	Yes
Interview 12, Participant 2	80-85	Male	Other	Military	Runnymeade*	With family or friends	Good	Yes
Interview 12, Participant 3	70-75	Female	A Levels	Data processor	Runnymeade*	On your own, not near family or friends	Good	Yes
Interview 12, Participant 4	80-85	Female	A Levels	Accountant	Runnymeade*	On your own, not near family or friends	Good	No
Interview 12, Participant 5	70-75	Female	Other		Runnymeade*	With family or friends	Good	No
Interview 12, Participant 6	70-75	Female	O Levels	A&E Receptionist	Runnymeade*	With family or friends	Good	Yes
Interview 13, Participant 1	70-75	Male	Degree or higher	Director	Kingston upon Thames	With family or friends	Very good	Yes

Appendix E: Older Adult Participants-Second Phase

PARTICIPANT ID	AGE	GENDER	EDUCATION	OCCUPATION	BOROUGH OF RESIDENCE	LIVING ARRANGEMENT	HEALTH	FLU VACCINE	GROUP
Interview 1, Participant 1 (A)	70-75	Female	Degree or higher	Academic	Lambeth	With family or friends	Good	No	A
Interview 2, Participant 1 (A)	75-80	Male	Degree or higher	IT Manager	Camden	With family or friends	Fair	Yes	A
Interview 2, Participant 2 (A)	75-80	Male	O Levels	Retired	Hackney	With family or friends	Good	Yes	A
Interview 3, Participant 1 (B)	80-85	Female	Other	Jack of all trades'	Hammersmith and Fulham	On your own, not near family or friends	Fair	Yes	B
Interview 3, Participant 2 (B)	75-80	Female	No formal qualifications	Cook and cleaner	Hammersmith and Fulham	With family or friends	Fair	Yes	B
Interview 4, Participant 1 (A)	70-75	Male	Degree or higher	Training Adviser (Church of England)	Islington	With family or friends	Very good	Yes	A
Interview 5, Participant 1 (A)	85-90	Female	Degree or higher	Chemist	Kensington and Chelsea	Near family or friends but on your own	Good	Yes	A
Interview 6, Participant 1 (B)	70-75	Female	A Levels	Registered Nurse	Westminster	With family or friends	Fair	Yes	B
Interview 6, Participant 2 (B)	70-75	Female	Degree or higher	Librarian	Islington	With family or friends	Good	Yes	B
Interview 6, Participant 3 (B)	75-80	Male	Degree or higher	Research	Kensington and Chelsea	With family or friends	Very good	No	B
Interview 7, Participant 1 (B)	80-85	Male	Degree or higher	Fire Engineering	Watford*	With family or friends	Very good	Yes	B
Interview 7, Participant 2 (B)	80-85	Female	Other	PA	Watford*	With family or friends	Good	Yes	B
Interview 8, Participant 1 (A)	90+	Female	No formal qualifications	Telephone operator	Lewisham	Near family or friends but on your own	Good	Yes	A
Interview 8, Participant 2 (A)	75-80	Female	No formal qualifications	Administrator	Lewisham	Near family or friends but on your own	Good	No	A
Interview 8, Participant 3 (A)	75-80	Male	No formal qualifications	HGV Driver	Lewisham	Near family or friends but on your own	Very good	Yes	A
Interview 8, Participant 4 (A)	70-75	Female	Other	Dressmaker	Lewisham	With family or friends	Good	No	A
Interview 9, Participant 1 (B)	75-80	Female	Other	Day Nursery Owner	Lewisham	On your own, not near family or friends	Good	Yes	B
Interview 9, Participant 2 (B)	70-75	Female	A Levels	PA	Lewisham	With family or friends	Very good	Yes	B
Interview 9, Participant 3 (B)	70-75	Female	O Levels	Civil Servant	Lewisham	On your own, not near family or friends		No	B

Interview 9, Participant 4 (B)	80-85	Female	Prefer not to answer	Cook	Lewisham	With family or friends	Fair	Yes	B
Interview 10, Participant 1 (B)	70-75	Male	Degree or higher	Consulting Engineer	Kingston upon Thames	Near family or friends but on your own	Very good	Yes	B
Interview 11, Participant 1 (A)	70-75	Female	Other	Hairdresser	Kensington and Chelsea	With family or friends	Fair	Yes	A
Interview 11, Participant 2 (A)	70-75	Male	Degree or higher	Mental Health Counsellor	Kensington and Chelsea	With family or friends	Good	No	A
Interview 12, Participant 1 (A)	75-80	Female	Degree or higher	Accountant	Kensington and Chelsea	On your own, not near family or friends	Very good	No	A
Interview 13, Participant 1 (B)	70-75	Male	A Levels	Civil Servant	Epsom*	On your own, not near family or friends	Good	Yes	B
Interview 14, Participant 1 (A)	70-75	Other	Degree or higher	Executive Officer	Westminster	On your own, not near family or friends	Very good	Yes	A
Interview 14, Participant 2 (A)	70-75	Female	A Levels		Westminster	Near family or friends but on your own	Good	Yes	A
Interview 15, Participant 1 (B)	70-75	Female	Degree or higher	Teacher	Redbridge	Near family or friends but on your own	Good	No	B
Interview 16, Participant 1 (B)	75-80	Male	Degree or higher	Company Director	Kensington and Chelsea	With family or friends	Good	Yes	B
Interview 17, Participant 1 (A)	70-75	Female	A Levels	Office Worker	Westminster	On your own, not near family or friends	Bad	Yes	A
Interview 18, Participant 1 (B)	75-80	Male	Other	Nurse Manager	Islington	With family or friends	Fair	No	B
Interview 19, Participant 1 (B)	75-80	Male	Degree or higher	Musician	Kensington and Chelsea	On your own, not near family or friends	Good	Yes	B
Interview 20, Participant 1 (A)	70-75	Female	Degree or higher	Social Worker	Kingston upon Thames	With family or friends	Fair	Yes	A
Interview 21, Participant 1 (A)	70-75	Male	Degree or higher	Scientist	Enfield	With family or friends	Fair	Yes	A
Interview 22, Participant 1 (A)	70-75	Male	Prefer not to answer	Retired	Richmond upon Thames	With family or friends	Very good	Yes	A
Interview 23, Participant 1 (B)	75-80	Female	Degree or higher	Teacher	Kingston upon Thames	With family or friends	Good	No	B
Interview 23, Participant 2 (B)	80-85	Male	Other	Teacher	Kingston upon Thames	With family or friends	Very good	No	B
Interview 24, Participant 1 (A)	70-75	Female	Degree or higher	Teacher	Enfield	Near family or friends but on your own	Fair	Yes	A
Interview 24, Participant 2 (A)	70-75	Male	Degree or higher	University Lecturer	Kingston upon Thames	With family or friends	Good	No	A
Interview 24, Participant 3 (A)	70-75	Female	Degree or higher	Teacher	Kingston upon Thames	With family or friends	Fair	Yes	A

Appendix F: Scenario Injects-Phase One

Appendix F1: Government Considers Travel Ban

FOR RESEARCH PURPOSES ONLY

(Ireland €1) 65p

Monday 14th November 2016

www.independentnews.co.uk

• Number 6305

THE INDEPENDENT

Government considers travel ban as flu grips Greece

David Blatchford

A new strain of influenza is sweeping through Greece as the country's health system, still recovering after the recent economic turmoil, struggles to keep up. Although it is still early days, scientists are warning of potentially concerning similarities between the flu now active in Greece and the virus that caused the 1918 Spanish flu pandemic that killed between 3 and 5% of the world's population.

While the infection does not seem to have spread beyond Greece, over 2 million Brits holiday in Greece each year, and public health officials are preparing for a possible UK outbreak.

According to Public Health officials, there are only three suspected British cases, all involving individuals who recently travelled to Greece. Officials are, however, concerned about the possibility of local transmission.

'The UK's Public Health system is working quickly to identify and confirm possible cases' according to the Health Secretary. 'We have a Pandemic Influenza Response Plan and are well positioned to deal with this issue.'

The government has issued assurances that it is working closely with local health providers and with international partners both in Europe and at the World Health Organization to ensure the UK is prepared should the virus spread.

The Foreign and Commonwealth office has not yet formally issued a travel advisory but suggested today that unnecessary travel to Greece be cancelled or postponed until further notice. When asked whether a formal ban would be put in place, the Foreign Secretary responded: 'We will continue to monitor developments. Any further action will be based on the sound recommendations of our public health experts.'

Appendix F2: WHO Declares a Pandemic

FOR RESEARCH PURPOSES ONLY

(Ireland €1) 65p

Friday 8th January 2017

www.independentnews.co.uk

• Number 6358

THE INDEPENDENT

WHO declares pandemic as British fatalities increase

David Blatchford

The World Health Organization today declared the Ovine flu to be a pandemic. The flu, which originated from infected lambs in Greece, has resulted in 28,775 cases world-wide and 144 deaths. According to the WHO director-general, 'The world is moving into the early days of an influenza pandemic. Countries should prepare to see the further spread of cases in the near future.'

Of the nearly 5,000 cases reported in the UK, only 12 fatalities have occurred as a result of the Ovine flu however the recent death of Alice Murray on Wednesday in London has raised fears the worst is yet to come.

Unlike other reported Ovine flu victims, Ms. Murray, a 24-year old accountant, did not suffer from any previous health complications and is not believed to have been pregnant. The death of an otherwise-healthy young adult bears a chilling resemblance to the 1918 Spanish Flu pandemic and has prompted public health officials to seriously re-examine possible worst-case scenarios.

At a press conference following the WHO announcement, the Chief Medical Officer (CMO) announced that the development of a vaccine is underway and may be available as early as May. Public Health England is currently reviewing the vaccine priority lists and updates will be provided as the information becomes available.

The CMO encouraged people to remain calm and to follow good public health practices such as the guidance issued by the Department of Health around staying home if ill and the 'catch it, bin it, kill it' campaign.

In Parliament today, the Prime Minister responded to accusations that the government is not prepared to handle this emerging crisis. 'Since the beginning, we have taken decisive action to address the threat of Ovine Flu. Today's decision by the WHO does not change our approach. We will continue to build on measures already in place under our Pandemic Influenza Response Plan and to work constructively and collaboratively with our partners both here in the UK and abroad.'

Appendix G: Scenario Injects-Phase Two

Appendix G1: Government Announces Vaccine

FOR RESEARCH PURPOSES ONLY

(Ireland €1) 65p
Friday 5th May 2017
www.independentnews.co.uk
• Number 6425

THE INDEPENDENT

Ovine Flu continues to spread as government announces vaccine

David Blatchford

It has been four months since the World Health Organization declared the Ovine flu to be a pandemic and the government today announced that a vaccine has been successfully developed and will shortly be rolled out to the public. The pandemic, which originated with infected lambs in Greece, has rapidly spread across the globe.

Whilst early comparisons to the devastating Spanish flu pandemic of 1918 have, thankfully, proven to be inaccurate, Public Health England estimates that there have been 5.5 million cases in the UK since the outbreak of the Ovine flu. Of these cases, over 25,000 required hospitalization. The UK has also seen an estimated 1,250 fatalities including more than 150 children.

The pandemic has placed additional stressors on an already strained NHS and, over the last months, GPs have been urging patients to avoid using the medical system for non-essential services.

In an attempt to alleviate the pressure on the NHS, the government has set up the National Pandemic Flu Service and urges anyone who thinks they may have the Ovine flu, to contact the Flu Service and to avoid going to the GP or A&E.

It is hoped the emergence of a vaccine will help to forestall a second wave of the flu. 'This is a milestone in our efforts to fight the Ovine flu virus' according to the Chief Medical Officer (CMO). 'The vaccine will be made available to at-risk groups first and I encourage everyone to get vaccinated, since there is simply no better way of fighting the Ovine flu.'

Specific details of the vaccine rollout are still emerging, but the NHS is expected to release an information leaflet later today.

Despite the introduction of the vaccine, the CMO advised people not to become complacent and to continue to follow good public health practices such as the guidance issued by the Department of Health around staying home if ill and the 'Catch it, Bin it, Kill it' campaign.

Appendix G2: Vaccination Advisory Leaflets (A and B)

Who should get vaccinated?

Who will get the vaccination first?

The vaccine is being offered first to people who are most likely to become seriously ill if they catch ovine flu and to those caring for high risk individuals who cannot receive vaccination. These people are in the following priority groups:

- Pregnant women at any stage of pregnancy
- Anyone 6 months through 24 years of age
- People aged 25 through 64 years of age with certain chronic health conditions or compromised immune systems.
- Health care and emergency medical services personnel

People who aren't in the priority groups listed will be offered the vaccine at a later stage.

About the vaccine

What is Ovine flu?

Ovine flu is a respiratory disease caused by a new strain of influenza virus. The seasonal flu vaccines that are already available don't protect against ovine flu, so a new flu vaccine has been developed.

The seasonal flu vaccine does not protect against Swine flu

Are there any side-effects to the vaccine?

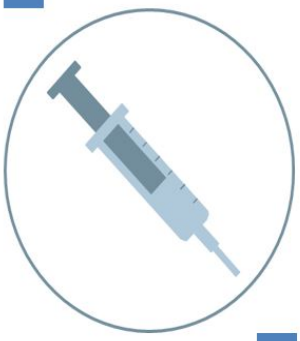
All vaccinations can produce side-effects such as redness, soreness and swelling at the site of the injection. Flu vaccines can cause symptoms like fever, headache and muscle aches, but they are much milder than the flu itself and only last a day or so.

Is the vaccine safe?

Similar vaccines containing another flu virus strain have been clinically tested. Experience with seasonal flu vaccines has shown that changing the strain of virus in a vaccine does not substantially affect the safety of the vaccines.

FOR RESEARCH PURPOSES ONLY A

Ovine flu vaccination: what you need to know



If you think you have Ovine flu, contact the National Pandemic Flu Service:

- **www.direct.gov.uk/ovineflu**
- **0800 1 111 111**
- **Textphone: 0800 2 222 222 (for people who are deaf or hard of hearing)**

Who should get vaccinated?

Who will get the vaccination first?

The vaccine is being offered first to people who are most likely to become seriously ill if they catch ovine flu and to those caring for high risk individuals who cannot receive vaccination. These people are in the following priority groups:

- Pregnant women at any stage of pregnancy
- Anyone 6 months through 24 years of age
- People aged 25 through 64 years of age with certain chronic health conditions or compromised immune systems.
- Health care and emergency medical services personnel

People who aren't in the priority groups listed will be offered the vaccine at a later stage.

Ovine influenza is caused by a new strain of flu and may cause higher risk in groups not as strongly affected by seasonal flu. Current studies indicate that the risk for infection among persons age 65 or older is less than the risk for younger age groups.

About the vaccine

What is Ovine flu?

Ovine flu is a respiratory disease caused by a new strain of influenza virus. The seasonal flu vaccines that are already available don't protect against ovine flu, so a new flu vaccine has been developed.

The seasonal flu vaccine does not protect against Swine flu

Are there any side-effects to the vaccine?

All vaccinations can produce side-effects such as redness, soreness and swelling at the site of the injection. Flu vaccines can cause symptoms like fever, headache and muscle aches, but they are much milder than the flu itself and only last a day or so.

Is the vaccine safe?

Similar vaccines containing another flu virus strain have been clinically tested. Experience with seasonal flu vaccines has shown that changing the strain of virus in a vaccine does not substantially affect the safety of the vaccines.

FOR RESEARCH PURPOSES ONLY B

Ovine flu vaccination: what you need to know

If you think you have Ovine flu, contact the National Pandemic Flu Service:

- **www.direct.gov.uk/ovineflu**
- **0800 1 111 111**
- **Textphone: 0800 2 222 222 (for people who are deaf or hard of hearing)**

Appendix G3: Vaccine Denied to Older Adult

THE Sun

(Ireland €1) 65p
Friday 11th May 2017
www.independentnews.co.uk
• Number 6425

Outrage in London as NHS denies flu to grandmother of six

Anna Burrows

When the government announced, last week, the start of Ovine flu vaccinations, Elizabeth Martin breathed a sigh of relief. For months, this widowed mother of three (grandmother of eight) has been panic-stricken at the thought she might become ill.

Mrs. Martin, whose grandfather died in the 1918 Spanish flu pandemic, contacted her GP to find the nearest vaccination clinic and was determined to be first in line. But, on arrival, she was told she should go home as she would have to wait to get the vaccine as there weren't enough doses to go around and she wasn't considered a priority

Her daughter Karen can't believe it: 'I took time off work to make sure my mother could get the vaccine. She gets the flu shot every year because she is considered high-risk. Can you tell me why she is being sent to the back of the line this time? We're in the middle of a pandemic, people are dying and it's like they don't care about the elderly.'

Since the outbreak of the Ovine flu, there have been 5.5 million cases in the UK; 25,500 of which required hospitalization. The UK has also seen an estimated 1250 fatalities from the Ovine flu, including more than 150 children.

Said Mrs. Martin's son, Daniel, 'I want to know why there's not enough vaccine for everybody; and, if there's not enough to go around, why aren't older people like my mum being given priority. It looks like they're just giving up. Or is this the flu preparedness that the government talks about?'

When asked about Mrs. Martin's case, NHS spokesperson Dr. Michael Wilson commented that, while he can't speak to a particular case, 'the vaccine is being offered first to people who are at the highest risk from Ovine flu. At this time, the risk for infection for people 65-and-over is less than the risk for younger age groups'.

While the government has said that people who aren't in the priority groups will be offered the vaccine at a later stage, for now that's cold comfort for Elizabeth Martin and her family.

Appendix H : Participant Questionnaires

Appendix H1 : Participant Questionnaire-Older Adults

Age:

☐ 70-75 ☐ 75-80 ☐ 80-85 ☐ 85-90 ☐ 90+

Gender:

☐ Male ☐ Female
☐ Other:_____ ☐ Prefer not to answer

Education:

☐ No formal qualifications
☐ O Levels
☐ A Levels
☐ Degree or higher
☐ Other
☐ Prefer not to answer

Occupation (If retired, previous occupation): _____

Borough of Residence: _____

Do you live:

☐ With family or friends
☐ Near family or friends but on your own
☐ On your own, not near family or friends

Do you consider your health in general to be…?:

☐ Very good ☐ Bad
☐ Good ☐ Very bad
☐ Fair ☐ Prefer not to answer

Did you have the seasonal flu vaccine last year?:

☐ Yes ☐ No ☐ Prefer not to answer

Where do you go for day-to-day news? (Tick all that apply)

☐ Friends or family
☐ Internet-news sites (ie: BBC News, Guardian online)
☐ Internet-general
☐ Print newspapers-National (ie: Telegraph, Guardian, Times, Independent)
☐ Print newspapers-Local (ie: Metro, Evening Standard)
☐ Radio
☐ Social media (ie: Facebook, Twitter)
☐ Television
☐ Other:

_____

Where do you get your medical/health information? (Tick all that apply)

- ☐ Friends or family
- ☐ Healthcare professionals (ie: GP, pharmacist)
- ☐ Local government website
- ☐ Official departments and agencies (ie: Department of Health, Public Health Agency, World Health Organization)
- ☐ Official websites (ie: NHS website)
- ☐ Other online sources
- ☐ Other: _____

Appendix H2 : Participant Questionnaire-Younger Adults

Age: _____

Gender:

- ☐ Male
- ☐ Female
- ☐ _____

University: _____

Student Status:

☐ Home ☐ EU ☐ Overseas

Do you live in student halls?:

☐ Yes ☐ No ☐ Not this year but previously

Program of Study:

- ☐ Arts and Humanities
- ☐ Natural Sciences and Mathematics
- ☐ Health and Medicine
- ☐ Psychology/Psychiatry
- ☐ Law
- ☐ Social Sciences
- ☐ Other: _____

Do you have a chronic condition for which you take daily medication?:

☐ Yes ☐ No ☐ Prefer not to answer

Did you have the seasonal flu vaccine last year?:

☐ Yes ☐ No

Where do you go for day-to-day news? (Tick all that apply)

- ☐ Friends or family
- ☐ Internet-news sites (ie: BBC News, Guardian online)
- ☐ Internet-general
- ☐ Print newspapers-National (ie: Telegraph, Guardian, Times, Independent)
- ☐ Print newspapers-Local (ie: Metro, Evening Standard)
- ☐ Radio
- ☐ Social media (ie: Facebook, Twitter)
- ☐ Television
- ☐ Other: _____

Where do you get your medical/health information? (Tick all that apply)

- ☐ Friends or family
- ☐ Healthcare professionals (ie: GP, pharmacist)
- ☐ Local government website
- ☐ Official departments and agencies (ie: Department of Health, Public Health Agency, World Health Organization)
- ☐ Official websites (ie: NHS website)
- ☐ Other online sources
- ☐ Other: _____

Appendix I: Interview Schedules-Phase One

Appendix I1: Interview Schedule-Older Adults

Knowledge/perception of pandemic

1. When you hear the term 'pandemic influenza' what does it make you think/what do you think it means?
1. Do you have any experience of pandemic influenza?
2. When you hear the term 'at-risk', what does it make you think?
3. When you hear the term 'vulnerability', what does it make you think?
4. Do you think either of these terms would apply to you in a pandemic?
   4a. Why/why not?
5. Who do you think these terms would apply to in a pandemic?

Scenario Inject #1

1. How would you respond? (ie: information seeking, call the doctor, turn the page)
2. Would you change anything in your day-to-day routine; do anything different on the basis of what you just read?
   2b. Why/why not?
   2c. If yes, what?
3. Do you feel you need more information?
   3b. If so, what kind of information would you want?
   3c. Where would you go for this information?
4. Do you think you would be at-risk?
   4b. Why/why not?

Scenario Inject #2

1. How would you respond? (ie: information seeking, call the doctor, turn the page)
2. Would you change anything in your day-to-day routine; do anything different on the basis of what you just read?
   3b. Why/why not?
   3c. If yes, what?
3. Do you feel you need more information?
   4b. If so, what kind of information would you want?
   4c. Where would you go for this information??
4. Do you think you would be at-risk?
   5b. Why/why not?
5. Has anything changed from a few weeks ago?

With this scenario (situation) in mind:

1. What sort of things do you think older adults could do to avoid getting sick?
   a. Do you think you would do these?
   b. Why/why not?

2. I'm going to go through four possible behaviours and I'd like you to tell me whether you think this is something that would be useful to protect yourself and others from the flu and whether this is something you think you would (or could) do?
    a. Handwashing
    b. Using a tissue or your sleeve to cover a cough/sneeze
    c. Minimizing how often you go out:
        (ie: not going to organized activities (university/older adult day centres or classes), avoiding commuting at peak times, not going out on a Saturday evening)
    d. Vaccination
3. What do you thing would be some of the challenges for older adults during a pandemic?
    (ie: Transport (public transport), Medical/Home care, Accessing groceries/medication, loss of support from family/friends)
4. If you got sick…
    a. Would you seek medical assistance?
        i. If so, how would you go about this?
            (ie: make an appointment to see a doctor, go to a drop-in clinic, call a help or information line)
        ii. During the last outbreak of pandemic influenza, in 2009, there was the National Pandemic Flu Service; a dedicated website and phone line for people to get information, check their symptoms and get access to antivirals, if necessary. Do you think this is something that you would use?
            1. Why/why not?
            2. If so, would you be more likely to use the website or the phone line?
    b. Would you stay home?
        i. When would you start to stay home?
        ii. What obstacles would there be to staying home
    c. Are you familiar with the concept of 'flu friends'?
        i. Do you think this is something that would be helpful for older adults?
        ii. Is this something that you would do?
            1. Why/why not?
    d. What do you think the biggest challenges would be for you if you were to get sick?
5. As we close, I'd like to get any final thoughts on what you think would be important in the context of communicating with older adults in the event of an influenza pandemic?

Appendix I2: Interview Schedule-Younger Adults

Knowledge/perception of pandemic

6. When you hear the term 'pandemic influenza' what does it make you think/what do you think it means?
7. When you hear the term 'risk', what does it make you think?
8. When you hear the term 'vulnerability', what does it make you think?
9. Who do you think would be at risk or vulnerable in a pandemic?
10. Do you have any experience of pandemic influenza?

Scenario Inject #1

5. How would you respond? (ie: information seeking, call the doctor, turn the page)
6. Would it make a difference if it was term time?
7. Would you change anything in your day-to-day routine; do anything different on the basis of what you just read?
   3b. Why/why not?
   3c. If yes, what?
8. Do you feel you need more information?
   4b. If so, where would you go for this information?
   4c. What kind of information would you want?
9. Do you think you would be at risk?
   5b. Why/why not?

Scenario Inject #2

6. How would you respond? (ie: information seeking, call the doctor, turn the page)
7. Would it make a difference if it was term time?
8. Would you change anything in your day-to-day routine; do anything different on the basis of what you just read?
   3b. Why/why not?
   3c. If yes, what?
9. Do you feel you need more information?
   4b. If so, where would you go for this information?
   4c. What kind of information would you want?
   4d. Who do you trust to deliver the information?
10. Do you think you would be at risk?
    5b. Why/why not?
11. Has anything changed from a few weeks ago?

With this scenario (situation) in mind:

6. What sort of things do you think your fellow students could do to avoid getting sick?
   a. Do you think you would do these?
   b. Why/why not?

7. I'm going to go through four possible behaviours and I'd like you to tell me whether you think this is something that would be useful to protect against getting sick and whether this is something you think you would (or could) do?
    a. Handwashing
    b. Using a tissue or your sleeve to cover a cough/sneeze
    c. Minimizing how often you go out:
        (ie: not going to organized activities (university/older adult day centres or classes), avoiding commuting at peak times, not going out on a Saturday evening)
    d. Vaccination
8. If you got sick…
    a. Would you seek medical assistance?
        i. If so, how would you go about this?
            (ie: make an appointment to see a doctor, go to a drop-in clinic, call a help or information line)
        ii. Last time, in 2009, there was the National Pandemic Flu Service; a dedicated website and phone line for people to get information, check their symptoms and get access to antivirals, if necessary. Do you think this is something that you would use?
            1. Why/why not?
    b. Would you stay home?
        i. When would you start to stay home?
        ii. What obstacles would there be to staying home
    c. Are you familiar with the concept of 'flu friends'?
        i. Do you think this is something that would be helpful?
        ii. Is this something that you would do?
            1. Why/why not?
9. As we close, I'd like to get any final thoughts on what you think would be important in the context of a pandemic?

Appendix J: Scenario Questionnaires-Phase Two

Appendix J1: Scenario Stage One

The Independent: *'Ovine Flu continues to spread as government announces vaccine'*

1. How likely would you be to get the vaccine at this point?
   ☐ Very likely ☐ Likely ☐ Uncertain ☐ Unlikely ☐ Very unlikely

2. Do you think you would be part of an at-risk group?
   ☐ Yes ☐ No ☐ Don't Know

Appendix J2: Scenario Stage Two

Leaflet: *'Ovine Flu Vaccination: What you need to know'*

1. How likely would you be to get the vaccine at this point?
   ☐ Very likely ☐ Likely ☐ Uncertain ☐ Unlikely ☐ Very unlikely

2. Do you think you would be part of an at-risk group?
   ☐ Yes ☐ No ☐ Don't Know

Appendix J3: Scenario Stage Three

The Sun: *'Outrage in London as NHS denies flu vaccine to grandmother of six'*

1. How likely would you be to get the vaccine once it is available to everyone?
   ☐ Very likely ☐ Likely ☐ Uncertain ☐ Unlikely ☐ Very unlikely

2. Do you feel it's acceptable that over-65's are not initially offered the vaccine?
   ☐ Yes ☐ No ☐ Don't Know

Appendix K : Interview Schedule-Phase Two (Older Adults)

Knowledge/perception of pandemic

1. When you hear the term 'pandemic influenza' what does it make you think/what do you think it means?
   1a. Where would you go to discover more information about pandemic influenza?
2. Do you have any experience of pandemic influenza?
3. Who do you think would be at-risk in a pandemic?
4. If you were told you were at-risk, how would that make you feel?
5. What if you were told you were vulnerable; would your reaction be the same?
6. Thinking of the terms 'risk' and 'vulnerability', what do you think these terms mean/are they interchangeable?.

Scenario Inject #1

7. What are your initial thoughts/reaction to the article?
8. Who do you think would be most at risk?
9. Do you feel you would be at risk?
   9a. Why/why not?
10. Would you intend to get the vaccine?
11. What sort of things, aside from getting vaccinated, do you think people could do to avoid getting sick?
    11a. Do you think you would do these?
    11b. Why/why not?
    11c. If not already mentioned, ask about handwashing, respiratory hygiene, minimizing how often you go out and vaccination
12. If you were to become ill, or suspect you were ill would you seek medical assistance?
    12a. If so, how would you go about this? (ie: make an appointment to see a doctor, go to a drop-in clinic, call a help or information line)
    12b. During the last outbreak of pandemic influenza, in 2009, the government set up a National Pandemic Flu Service which was a dedicated website and phone line where people could get information, check their symptoms, and get access to antivirals, if necessary. Do you think this is something that you would use?
    12c. Why/why not?
    12d. If so, would you be more likely to use the website or the phone line?

Vaccination leaflet (Scenario Inject #2)

13. What are your initial thoughts/reaction to the leaflet?
14. How likely would you be to get the vaccine at this time?

15. Do you think you would be part of an at-risk group?
16. 15a. If so why/ if not why not
17. Do you feel you need more information?
    16a. If so, what type of information?
    16b. Where would you want to get that information from (source)?
    16c. Who would you consider to be a trusted authority? (AgeUk or other older adult stakeholder groups?)
18. Would you feel confident in the government's vaccination strategy? (ie: priority groups)
    17a. Why/why not?

Scenario Inject #3

19. What are your initial thoughts/response to the article?
20. Do you feel you need more information?
    19a. If so, what?
21. Would you intend to get vaccinated when the vaccine becomes available to over-65 year olds?
    20a. Why/why not?
22. Certain groups have been identified as at-risk. Do you think it's reasonable to initially give the vaccine only to those groups?
    21a. Why/why not?
23. Do you feel that it's acceptable that over-65's are not initially offered the vaccine?
    22a. Why/why not?
24. Were you surprised that the vaccine was not available to everyone at first?